

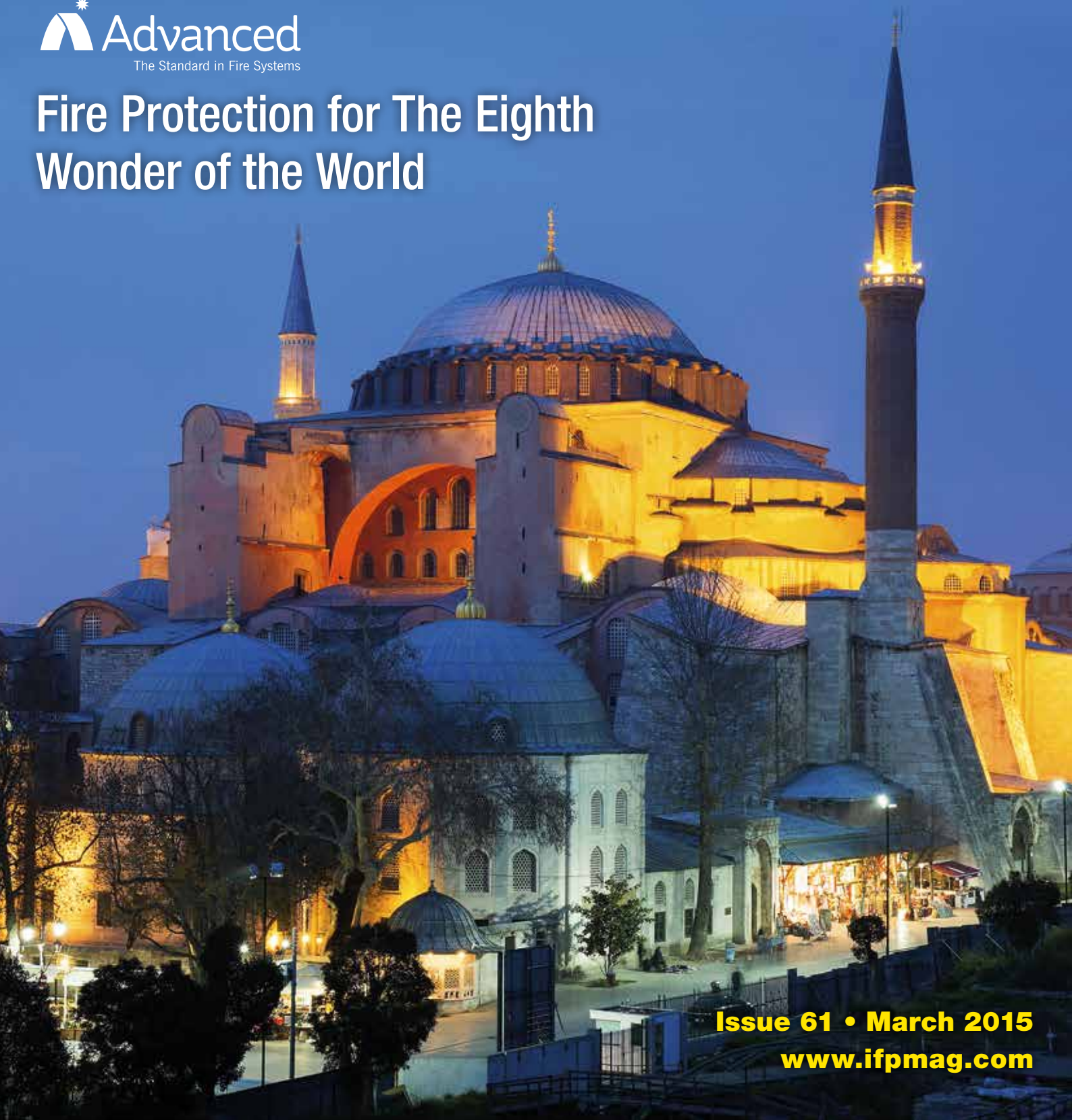
IFP

INTERNATIONAL FIRE PROTECTION MAGAZINE

THE GLOBAL VOICE FOR PASSIVE AND ACTIVE FIRE PROTECTION



Fire Protection for The Eighth Wonder of the World



Issue 61 • March 2015

www.ifpmag.com

Reasons to choose SAPPHIRE...



...#2 where safety is a top priority

SAPPHIRE systems are ideal for use in occupied areas. SAPPHIRE uses 3M™ Novec™ 1230 Fire Protection Fluid which is very low in acute and chronic toxicity. When compared to other fire suppression agents, Novec 1230 offers the greatest margin of safety for regular Class A hazards between the design concentration of the agent (4.5% - 5.3%) and the No Observable Adverse Effect Level (10%).

With its international standards and meeting the requirements of approval agencies globally this is why SAPPHIRE 25 / 42 bar systems are ideal for use in occupied areas.

To find out how HYGOOD fire suppression products can help protect your business visit www.tfppemea.com

Or contact your local sales representative, call: 0161 2594 000

tyco
Fire Protection Products



MARCH 2015 • ISSUE 61

Cover image: Advanced Electronics Ltd. Hagia Sofia, built in Constantinople almost 1,500 years ago and a landmark of global importance has been protected with an Advanced fire system (see page 6).

Publishers

David Staddon and Mark Seton

Contributing Editors

Michael Barnes, Kerry M. Bell, Raman Chagger, Chris Davis, Matthew Hartung, William E. Koffel, Chuck Lewis, Emelie Andrén Meiton, Chris Moore, Gary Nicholls, Jim Pauley, Niall Rowan, Kieron Tierney-Jones, Duncan J. White, Lee Wilson, Mike Wood.

Senior Designer

Richard Parsons

Web and IT Manager

Neil Spinney

IFP is published quarterly by:

MDM Publishing Ltd
The Abbey Manor Business Centre,
The Abbey, Preston Road,
Yeovil, Somerset BA20 2EN
Tel: +44 (0) 1935 426 428
Fax: +44 (0) 1935 426 926
Email: dave.staddon@mdmpublishing.com
Website: www.mdmpublishing.com

©All rights reserved

Annual subscription free of charge.
Register at www.mdmpublishing.com

ISSN – 1468-3873

DISCLAIMER: The views and opinions expressed in INTERNATIONAL FIRE PROTECTION are not necessarily those of MDM Publishing Ltd. The magazine and publishers are in no way responsible or legally liable for any errors or anomalies made within the editorial by our authors. All articles are protected by copyright and written permission must be sought from the publishers for reprinting or any form of duplication of any of the magazines content. Any queries should be addressed in writing to the publishers.

Reprints of articles are available on request. Prices on application to the Publishers.

Printed in the UK

PROUD TO SUPPORT



Contents

MARCH 2015

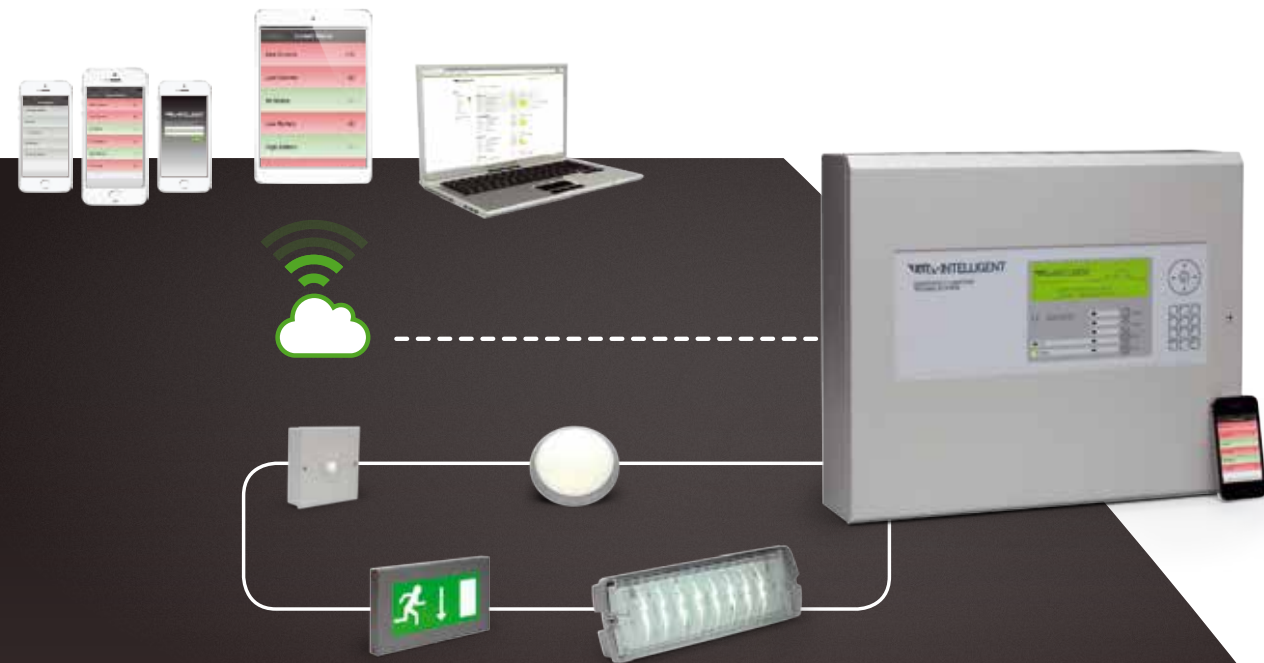
REGULARS

- 3** IFP Comment
- 5** NFPA Vision
- 6** News and Profiles
- 14** Buyer's Guide

FEATURES

- 19** Interschutz 2015
Profile & Showcase
- 23** Maintaining a High Level of
Fire Sprinkler Performance
- 29** Installation of Passive
Fire Protection
- 35** Fire in the Hole
- 43** Business Continuity and
the Need to Protect Data
- 48** Planning for Evacuating
the Disabled
- 52** Barriers to trade?
- 56** Testing the Response
of Smoke Detectors
- 61** Fire Detection – the Past,
Present and Future
- 64** Putting a Clean, Tested and
Maintained Damper on Fire
- 68** There's More to Glass
than Meets the Eye
- 72** Fire Safety Teamwork and
Effective Communication
- 74** The CE Marking – Explaining
its Jargon and Acronyms
- 78** Sliding Fire Doors
- 80** Advertisers' Index





EMERGENCY LIGHT TESTING SO EASY YOU CAN DO IT ON YOUR PHONE

THE EASIEST INSTALLATION

Use existing wiring, or your LAN for a 'no wires' network. Unlimited, low-cost, any-time, networking of panels anywhere via LAN.

FORGET THE PANEL

Cloud monitoring and reporting of any system anywhere in the world, on your computer, phone or tablet. Live status report gives immediate indication of any issues.

LOVES YOUR LIGHTS

Works with almost any light or luminaire, including LEDs. Easy conversion of existing lights.

NO LIMITS

Works with any existing emergency lighting system including central battery.

SAVE TIME & MONEY

Cost and efficiency benefits with automated testing and reporting. One click sharing of maintenance or test reports right from your phone.

PROOF

Full test history available any time. The easy way to demonstrate compliance to BS5266.

Lux Intelligent is the updated emergency lighting system from Advanced.

It saves money, time and makes it so easy to manage a compliant system, you can do it on your phone.

Use existing wiring, or your LAN for a 'no wires' network. Unlimited, low-cost, any-time, networking of panels anywhere via LAN.

Cloud monitoring and reporting of any system anywhere in the world, on your computer, phone or tablet. Live status report gives immediate indication of any issues.

Works with almost any light or luminaire, including LEDs. Easy conversion of existing lights.

Works with any existing emergency lighting system including central battery.

Cost and efficiency benefits with automated testing and reporting. One click sharing of maintenance or test reports right from your phone.

Full test history available any time. The easy way to demonstrate compliance to BS5266.

Contact us now for a demo



Tel: +44 (0)1670 707 111
Email: sales@luxintelligent.com
Web: www.luxintelligent.com

Building Fire Safety – an Opinion



Mike Wood
BA (Hons) Oxon, FIFireE

Mike Wood has spent forty years in the glass industry, closely associated with fire-resistant glazing and a regular contributor to fire safety in buildings.

Being part of and working within the UK fire safety sector is a privilege. It is certainly enjoyable. Meetings and interchanges are measured and polite. Rarely are voices raised; we wait for others to have their say, and listen respectfully; hardly is a strident note struck. And if complete consensus cannot be found then we agree to different perspectives and move on. Although opinions are aired, with credit we seek to base arguments on experience and sound technical principles.

For buildings we speak implicitly of balanced and integrated fire protection. "Integrated" means that fire safety naturally requires different approaches working together. That isn't just active and passive systems – an unfortunate polarisation forced more by industry structure than sound fire safety principles – but also, of course, emergency response and community fire safety, increasingly with facilities and building management. Now we need to welcome risk assessors to fire safety. "Balanced" means that there should always be a combination of measures, but that the relative weight of one compared to another in the mix will vary

according to the situation. That is determined by the risk profile of the building – its function, age, and complexity or simplicity of design – the fire safety objectives and the risk profile of those who live and work in the building or who just pass through.

The sector is a united one. Above all we see ourselves as advocates for a worthy cause.

Yet one cannot avoid the feeling that sometimes we tend to be just too much of a debating society. We find ourselves too often, or so it seems, speaking just within our own circle. Is that too harsh a judgment? But, let's ask: How many out there in other sectors are actually listening, absorbing the messages and reacting?

The key audiences are those in other sectors who, through their actions (or inactions), attitudes and decisions fundamentally affect fire safety in practice in constructions. That includes those in building engineering and design; also in specification, contracting, product supply and installation; and those who develop new building technologies, methods and materials with a blind spot concerning the potential impact of higher fire loads and greater sensitivities to fire spread and growth. Those who supervise, check and carry out refurbishments, re-modelling work and repairs should be included as well. Amongst all the day-to-day concerns and various commercial pressures, does fire safety really manage to force itself on to those agendas? Is the fire safety message getting across strongly enough?

Where is the evidence for the concerns? Is there good cause to wonder if our building stock is not entirely as fit for purpose as it should be regarding fire safety?

Every now and again we sadly have tragic and catastrophic fires that serve for a time to jolt the wider community and authorities out of their complacency. If we take the evidence from those events as filtered through into the public arena, then there is plenty to think about. It seems that questions concerning the risks of fire and its spread are not being asked at critical stages when work is being done. Not to know is

excusable since fire safety is a technical area, requiring special knowledge, particularly for building elements and products; and no one can have a monopoly on all the knowledge. But not to recognise knowledge gaps, and not to think to ask the key fire safety question when lives may be at stake, is unforgivable.

All would be fine if we could confidently relegate such concerns to the past. But the indication is most likely that things have not really changed. The evidence is largely circumstantial, personal experiences from particular instances (but just as valid nevertheless). For example, members of the glazing industry have consistently expressed concerns to the Glass and Glazing Federation (GGF) that they are coming up against too many cases where specifications coming down the design, specification and supply chain are too suspect against the best practice principles on glass behaviour in fire and fire-resistant glazed systems that the Federation has laboured so hard, for so long, to drum into the industry.

Maybe such reports are untypical. But when raised at fire sector gatherings I note nods of acknowledgement, smiles of encouragement, words of support; but no protesting voices. Such concerns are apparently not unknown to others in fire safety.

So, what should the fire safety sector do?

We have to take the arguments outside our sector. We need to go over the barricades to carry the fight (metaphorically) much more assertively to other sectors – especially construction, design, contracting, building ownership and management. We have to bang the competency drum much more loudly. The fire safety sector has to become more of an impassioned campaigning and marketing organisation in the cause of fire safety. But I suspect we aren't really entirely comfortable in that more forceful role. We are just too polite. And so fire safety will still struggle to force itself on to the building agenda; the fire safety sector will continue to air its frustrations mainly in its own forums; and building fire safety will stay more or less where it is. That is unless we actually do change.

Online TRAINING

LEARN ONLINE

On your own time. At your own pace.

Go to nfpa.org/onlinecourses and register today!

NFPA's self-guided online courses are:

PROFESSIONAL: Designed by industry experts involved with code and standard development

EASY TO USE: Built on an interactive platform with video, voice-over, and other user-friendly features

CONVENIENT: You can lay the foundation in code knowledge and earn CEUs from your home or office

AFFORDABLE and AVAILABLE 24/7!

"The difference between NFPA training and others is simply the expertise."

— Russell Leavitt, SET, SFPS
Tempe, AZ



nfpa.org/onlinecourses

Measured + Managed

Applying data to the multi-faceted global fire problem

'If we have data, let's look at the data. If all we have is opinions, let's go with mine.' Jim Barksdale, the former CEO of Netscape, is credited for this famous phrase. Data is everywhere, but analysis of it is key to making better decisions, focusing resources, and creating a plan of attack for a particular problem.



Jim Pauley

Our problem is fire. Over the last century, NFPA has learned that data plays a key role in helping fire departments, governments, and NFPA itself make better use of resources. It's the data that reveals why NFPA focuses on the issues it does. For instance, smoking in the U.S. has been the leading cause of home fire deaths for decades, with the data showing that 66 percent of the smoking material fire fatalities are from fires originating in upholstered furniture or mattresses/bedding. Data also shows that cooking is the leading cause of home fires (43 percent) and home fire injuries (38 percent), and that sprinklers reduce the fire death rate per 1,000 homes by about 80 percent and the average property loss per home by about 70 percent. Analysis of this data drove our focus on fire safe cigarettes and our Fire Sprinkler Initiative for one- and two-family homes. It also supported our smoke alarm awareness campaigns, as well as research into cooking technology to help reduce cooking fires.

NFPA's Fire Analysis and Research Division does an excellent job of gathering and analyzing data around the fire problem. We are working on more effective ways for our technical committees to interact with our data analysis teams, our extensive resource library, and the Fire Protection Research Foundation so that data continues to play a key role in our decision-making. We are working to improve our data collection and how we can utilize the latest technology to make data gathering easier and more accurate. On that point, I want to address two

important stakeholder groups, starting with the fire service. We recognize how important data can be in how you conduct your work; the needs assessments we completed for the U.S. fire service, for example, served as a basis for identifying the gaps between resources at hand and resources required to meet the need. NFPA also conducts extensive analyses of firefighter fatalities and injuries, and we make sure our technical committees have this information to make better decisions in the standards process.

But we're also aware that much of the burden falls to you to provide the data from fire incidents, and that this can be a cumbersome and time-consuming task. I want to emphasize that your work to provide this data is critical, both to the public and to the fire service itself. The data isn't ignored; it is analyzed, utilized, and reported back out for useful decision-making and action.

The other group I want to address is our international colleagues, who often tell me they have no effective means to gather data. I implore you to take on the task of establishing effective data-collection systems. Only when you have good data to determine your direction and approach can you effectively attack the fire problem. NFPA will continue to provide research, analysis, and information that uses data to help solve our fire problems. As Peter Drucker once said, "What gets measured gets managed."



Jim Pauley is President and CEO of the NFPA.

For further information, go to
www.nfpa.org

News

Advanced Panels Protect the Eighth Wonder of the World

Hagia Sofia, built in Constantinople almost 1,500 years ago and a landmark of global importance has been protected with an **ADVANCED** fire system. Built on the orders of Eastern Roman Emperor Justinian in 537, it was the world's largest cathedral and a cornerstone of Christianity for nearly 1,000 years, became one of its most important mosques for almost 500 years and is now a world famous museum and a crown jewel in the history and skyline of Istanbul. As far back as the 6th Century it was called 'the eighth wonder of the world'. It welcomes millions of visitors every year and became Turkey's most visited tourist attraction in 2012.

A recent upgrade to its fire system, installed by Advanced partner, D Sistem, saw an Advanced MxPro 4 fire system installed, supporting optical smoke and air sampling detection, and a range of input and output devices.

MxPro offers customers a choice of two panel ranges, four detector protocols and a completely open installer network that enjoys free complete training and support. MxPro panels can be used in single loop, single panel format or easily configured into high speed, multi-loop panels in 200

node networks covering huge areas.

Advanced's legendary ease of installation and configuration and wide peripheral range make it customisable to almost any application.

MxPro 4 is Advanced's benchmark panel and is EN54 2 & 4 approved, it offers users high quality and performance and the knowledge that its fire system can be easily upgraded in future. Its partner Advanced's MxPro 5 is EN54 2, 4 & 13 approved and is backward compatible with the MxPro 4.

Gerda Koberidze Özkan, spokesperson for D Sistem Ltd said "The improvements to this historic building have involved bringing the fire detection system up to date, ensuring that the building has the best quality fire alarm system and meets the highest standard in fire safety. We have used Advanced panels for several projects in the past as they are highly reliable, adaptable and can be upgraded in the future."

Etienne Ricoux, Advanced's Export Sales Manager for Europe, commented: "The Hagia Sofia is the latest landmark building to be protected by Advanced panels. It's probably the oldest building we've ever protected and beautifully



illustrates the power and quality of Advanced's fire systems. On the one hand we protect one of Europe's oldest landmarks and the other its current tallest building, The Shard in London.

"We believe that MxPro ticks all the boxes, combining proven reliability with innovation and ease-of-use. It also delivers a future-proof solution, with the capability to be easily upgraded and supplemented in future."

 For more information, go to www.advancedco.com

Crowcon Certified to ISO 14001

CROWCON – a world leader in portable and fixed gas detection instruments – has achieved certification to the ISO 14001 standard, which provides a framework for establishing, implementing and maintaining an Environmental Management System (EMS).

"Certification provides customers with the assurance that Crowcon's environmental management system meets international, industry-specific environmental standards," explains Barry Swift, Crowcon's Supply Chain Director. "In addition to helping to ensure best practice

in environmental management, ISO 14001 accreditation is another element of the Crowcon supply chain team's journey in helping deliver the highest levels of corporate social responsibility both within Crowcon and its supplier base."

The ISO 14001 standard encompasses a number of factors which have enabled Crowcon to minimise the environmental impact of its business. These factors include identifying areas where greater emphasis can be placed on reducing the use of resources and energy, as well as increasing the efficiency

with which Crowcon manages waste. The standard also requires legislative awareness and compliance, in addition to on-going monitoring and control of the company's environmental impact, now and into the future.

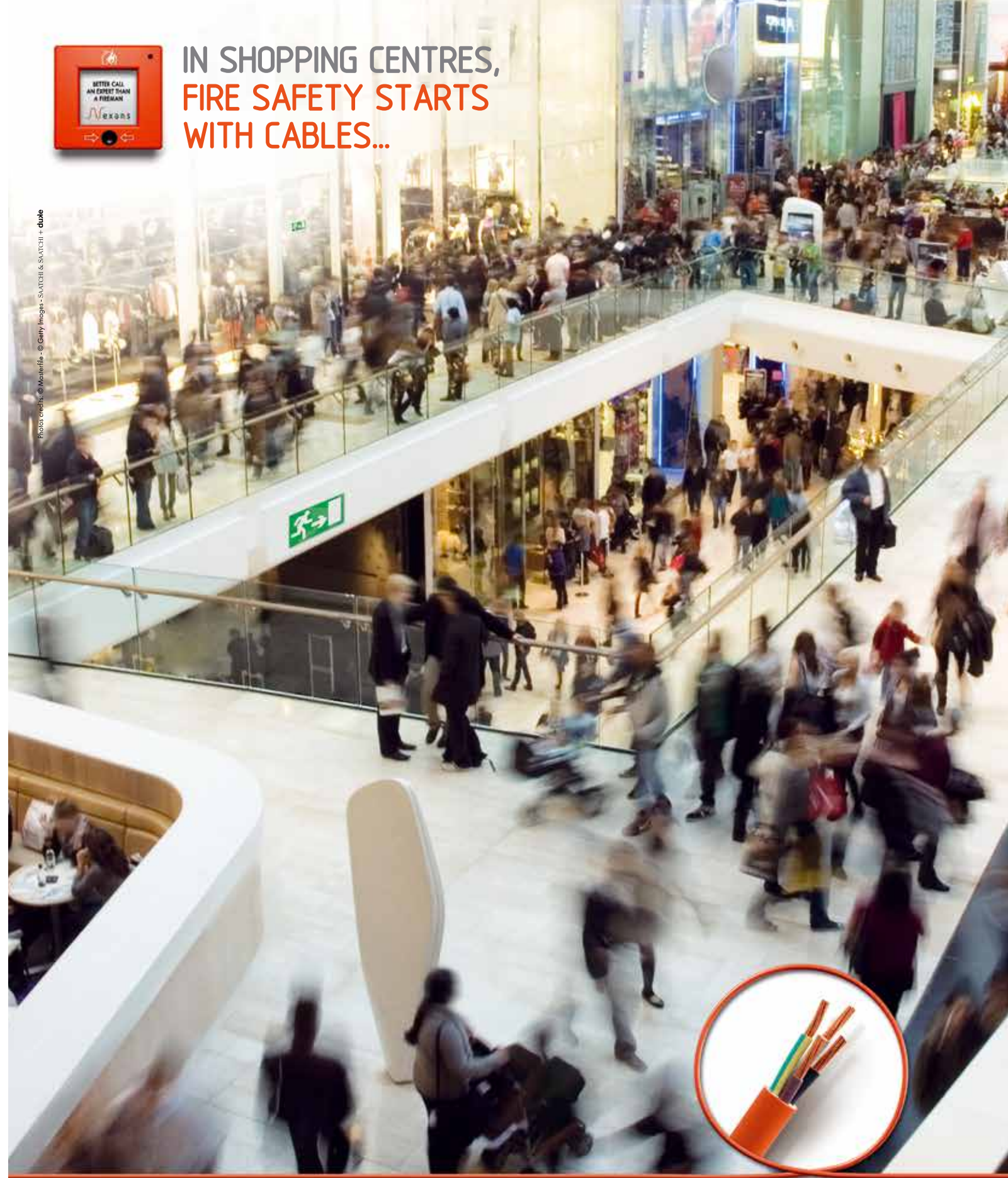
"Crowcon's focus is on supporting a safer working environment for our customers' employees, so it is only natural to extend that level of commitment and care to the wider environment," Barry concludes.

 For more information, go to www.crowcon.com



IN SHOPPING CENTRES,
FIRE SAFETY STARTS
WITH CABLES...

Photos credits: © Materfile - © Gary Images - SATCHEL & SATCHEL - dube



NEXANS IS COMMITTED TO IMPROVING SAFETY IN BUILDINGS

When the protection of human life and sensitive electronic equipment is paramount, choosing the right materials is essential. As well as assuring the integrity of fire safety systems, installing Nexans' Alsecure range of cables limits the effects of toxic fumes and smoke, thus aiding the facilitation of effective escape for people from a fire situation and reducing collateral damage to expensive equipment.

www.nexans.com



Your expert in Fire Safety Cables

The Wing Takes Flight with Apollo Fire Detection Donation

The Wing, the visitor and education centre being built at the National Memorial to the Few at Capel-le-Ferne in Kent, will be protected by **APOLLO** fire detection equipment.

The building, designed in the shape of the iconic Spitfire wing, will house the Scramble Experience, the Battle of Britain Trust's new visitor attraction, and the Geoffrey Page Centre, which is designed to be used by schools.

Together, the two halves of The Wing will highlight the bravery and heroism of "the Few" who took part in the Battle of Britain almost 75 years ago.

As the result of a collaboration between Apollo Fire Detectors, FFE and one of Apollo's major distributors ADI Global, all the fire detection equipment was donated to the Battle of Britain Memorial Trust. The fire protection system, which includes a range of XP95 detectors and beam

detectors from FFE was specified by, and is being installed and commissioned by, the award winning Kent based security company Red Alert Ltd.

Brian Warburton, Area Sales Manager Midlands and North West, at Apollo commented: "It is a pleasure for all of the companies involved to come together to

support this memorial project and provide the best possible fire protection."

The centre is currently under construction with the official opening planned for March 2015.

 For more information, go to www.apollo-fire.co.uk



Hochiki Europe 'Pandas' to WWF's Fire Detection needs

HOCHIKI EUROPE has supported conservation organisation, WWF, in developing a life safety solution for its Living Planet Centre headquarters. The £20 million sustainable building, which incorporated a timber-frame structure and renewable energy technologies, required a specialist fire detection system that ensured optimum performance while being sympathetic to its unique design.

The FIRElink-400 aspirating fire detection solution from Hochiki Europe was selected for the project, on recommendation from Cheshire-based integrators, Fire Bright Solutions. The aspirating unit enclosure houses the high sensitivity smoke detection electronics and a fan which draws air through sampling holes in four connected sampling pipes. The air is filtered before passing across a laser light source; if smoke particles

are detected an alarm condition will be activated. Sensitivity can be adjusted to as low as 0.0015% obscuration per metre based on a smoke particle size of just 0.0003µm. All detectors in the FIRElink range have been approved to EN 54-20:2006 Classes A, B & C by LPCB.

Configured around Hochiki Europe's Enhanced Systems Protocol (ESP) – a robust addressable communications solution for intelligent fire detection and fully integrated systems – the entire life safety system is able to be located within ceiling voids and/or suspended floors. This ensures it remains hidden from view, minimising its impact on the aesthetics of the building without compromising on performance. A range of other Hochiki Europe smoke and multi-heat sensors, call points and base sounder beacons were also included to ensure optimum fire



detection and to maximise safety. Since it has opened to the public, the Living Planet Centre has proved immensely popular with WWF staff and visitors alike and it is being held as an exemplar of modern construction practice. WWF spokesperson, Richard Eaton, is delighted with the sound advice and skilled craftsmanship provided by Fire Bright Solutions and Hochiki Europe.

 For more information, go to www.hochikieurope.com

Coltraco Ultrasonics Monitoring Fixed Fire Suppression Systems

COLTRACO ULTRASONICS is a leading UK based OEM of ultrasonic measuring equipment for the maintenance and monitoring of fixed fire suppression systems.

The company was originally started back in 1987 and manufactured one product called Portalevel™ which had been developed for use on board naval vessels to monitor fixed fire suppression systems. From those origins Coltraco has developed to the point where they manufacture 14 systems and products.

The company has developed quickly by identifying an issue when it came to monitoring and checking fire suppression systems in industrial facilities and offshore environments, both shipping, and oil and gas.

Traditionally the method for monitoring fire suppression cylinders was laborious and time consuming. The process involved removing and weighing each individual cylinder one at a time. Not only was this process time consuming it was dangerous as well. Typically, an annual maintenance check was considered adequate. As industry, particularly Oil and Gas, has become more safety conscious, so has the awareness that the fire suppression system needs to be adequately monitored.

From this beginning they now work across a number of industry verticals including, Oil and Gas, Marine and Shipping, Naval and Defence,

Data Centres, Power Plants and High Rise Buildings.

Today there are 8 different types of Portalevel™ from Portalevel™ Original to the flagship Portalevel™ Max which has been UL approved. Portalevel™ Max offers users the quickest and most effective tool for measuring the liquid level of fire suppression gasses including CO2, FM200, NOVEC and FE-13. Portalevel™ is a handheld product which can be used in both onshore and a model with offshore applications. With its user interface and data logging capabilities it has now developed into the most comprehensive portable tools for monitoring fire suppression systems.

In addition to Portalevel™, 18 months ago Coltraco introduced Permalevel™ Multiplex the first fully integrated system for monitoring cylinder points 24/7 365 days a year. The first commercial contract for this Permalevel™ came from the UK Atomic Energy Agency as they were looking for a safer and more efficient method for monitoring their fire suppression systems. Permalevel™ Multiplex was developed to build on the products Coltraco had to offer the most comprehensive solution possible.

Permalevel™ Multiplex is a fixed system; the ultrasonic measuring equipment is attached to the cylinder point which continuously monitors the liquid level of the suppressant gas. If the



liquid level drops below the required level, the alarm sounds so that the issue can be attended to.

Permalevel™ Multiplex has the ability to monitor up to 700 cylinder points in real time; this makes it an ideal solution for large industrial facilities. One of the key advantages of real time monitoring is that it reduces down time for maintenance and improves business continuity. The operator can call up each individual cylinder point as and when required.

The system develops so much data on a real time basis Coltraco had to develop an entirely new data logging software package. The benefit of this is that it allows the maintenance operator the ability to build up a picture of an individual cylinder point. This ensures that any issues can be identified in time and the integrity of the fire suppression system is maintained.

The system has been well received since it came onto the market with companies such as Tyco UAE specifying it for projects they have worked on. Permalevel™ Multiplex is aimed at high value high risk asset owners such as power plants who are extremely safety conscious.

As a business, one of Coltraco's key goals is to better educate the industry in regard to the inadequacy of an annual safety check. The products and systems are designed to improve life safety and business continuity.

Coltraco has just achieved ISO14001 Environmental Management certification which is another good step for them in working towards a cleaner and greener business.

 For further information, go to www.coltraco.co.uk



Fire Resistant Glazing Combines Functionality with Aesthetics

The newly built “Espace Culturel Aimé Césaire” in Gennevilliers, France and the “Bálna” in Budapest (see picture below) rely on the versatility of **SCHOTT**’s fire resistant glass.

Fire resistant glazing with PYRAN® S has many talents. It complies with the common European fire resistance categories and can be used in applications ranging from roof and facade constructions to partitions, smoke screens and doors.

“Several acclaimed building projects in Europe recently installed fire resistant glazing based on our PYRAN® S specialty glass. Thanks to the high quality of the material, architects and planners can use it in a variety of ways without having to compromise on functionality or aesthetics”, says Helmut Kugelmann, Head of Sales at SCHOTT in Jena.

Just recently, SCHOTT introduced its PYRAN® S specialty glass to the market in XXL format (1800 mm x 3600 mm) in the class E 30. It is considered to be the largest sheet format in its class in Germany.

“Our product ISO PYRAN® S can be used wherever requirements are needed

in addition to protection from fire. It is ideal for facades and roof glazing due to its stability upon exposure to UV-radiation, fluctuations in temperature and direct sunlight,” Kugelmann explains. Transparent fire-rated partitions provide protection in case of fire while at the same time allowing day light to flow freely from room to room. Smoke screen systems that use PYRAN® S do not need frame constructions at all. This is the result of a perfect symbiosis of glass panes connected to each other by joints that are barely noticeable and point mounts and brackets that secure the glass panes to a strong, but light, supporting structure.

Glass roof construction combines special aesthetics with protection from fire and sun

In the new center “Bálna” in Budapest which integrates shopping, culture and restaurants, PYRAN® S specialty glass is used in the building shell. Those sections covering escape routes were required to meet fire protection regulations E 30. This is where Schott’s PYRAN® S was installed. Two melting valves were fitted

into the spacer bar between the insulating glass panes. In case of fire, these valves melt to create an opening through which the air that is trapped between the panes can escape to the outside. Melting valves are used whenever the counter sheet to the fire resistant glass is made of toughened glass.

The suitability of this special design had already been proven in two successful fire tests using both horizontal and inclined positions. The structure of the panes combines fire protection inside with an outer solar control glass. PYRAN® S is also suitable for applications with multifunctional requirements such as thermal and solar protection, and noise control. Together with its systems partners, SCHOTT Technical Glass Solutions GmbH designs structures with PYRAN® S, which are internationally approved and outstanding for applications in glass and steel facades, as is illustrated by “Bálna” in Budapest.

For more information, go to www.schott.com/architecture/english/products/fire-rated-glass/pyran.html



Kentec Perform at the Hard Rock, Ibiza

KENTEC fire alarm control panels are at the heart of a new fire alarm system installed at Hard Rock’s first European beach hotel at Ibiza’s Playa d’en Bossa – where Hard Rock style and energy meet the cool Ibiza vibe.

Hard Rock Hotel Ibiza is where a unique ambience, rock memorabilia and entertainment for kids, teens and adults – plus an open air concert venue and rooftop terrace – mix with amazing views. Interiors here come with all the Hard Rock hallmarks – everything from Elvis’s bathrobe to Rihanna’s stage outfits are on display. Meanwhile, outside, rockstar touches include sunken loungers in the pool, a beachfront restaurant, and live performances from top acts.

Guests can party and relax in safety as well as in style thanks to the very latest in fire detection solutions supplied by Spanish distributors Activi Seguridad y Sistemas. This intelligent fire safety system, designed around

three networked four-loop and one single-loop Kentec Syncro networked analogue addressable fire control panels, includes over 1000 Apollo Optical and Heat detectors supported by Apollo high integrity open protocol.

Kentec’s flagship ‘open protocol’ Syncro series is recognized as one of

the most powerful systems of its type on the market today, guaranteeing the very highest standards of performance, safety and reliability that such a unique and vibrant venue demands.

For more information, go to www.kentec.co.uk



JANUS
FIRE SYSTEMS®

Engineered Fire Protection Solutions

Clean Agent Fire Extinguishing Systems • 3M™ Novec™ 1230 Fire Protection Fluid • Low & High Pressure CO₂ • Alarm & Detection • Air Sampling Detection • Water Mist • Foam

Improved Flow Characteristics

500 psi NOVEC 1230

Call for Information

1102 Rupcich Dr, Crown Point, IN 46307 • +1 219-663-1600 • www.janusfiresystems.com

'Titanic' Hotel Protected by C-TEC's ZFP Touchscreen Controlled Fire Panel

Liverpool's new Titanic-themed hotel at 30 James Street, is being protected by one of C-TEC's state-of-the-art ZFP touch-screen controlled addressable fire alarm panels.

With 64 cabin-style bedrooms, a spa pool, wedding suite and Champagne Bar/Restaurant all inspired by the legendary tale of the doomed ship, the luxurious hotel has been cleverly designed to recreate the magic of the block-busting film.

Providing the building with complete protection is a ZFP touchscreen controlled fire panel programmed and commissioned by SPL Fire Safety, the Cheshire-based consultancy that oversaw the project. The ZFP's brightly lit touchscreen interface displays all system information and, in the event of fire, will indicate its exact location. One of the C-TEC's SigTEL disabled refuge

systems has also been installed. In an emergency, the system will provide two-way communication between disabled people waiting in the hotel's 'refuge' areas and rescue teams.

Said David Lenagan of SPL Fire Safety: "30 James Street – home of the Titanic – is one of Liverpool's most exciting new tourist spots and we were delighted to secure the project. The iconic Grade II listed building required a bespoke fire alarm system and we had no hesitation

in utilising C-TEC's new ZFP panel. C-TEC's sales and technical support was also a key factor as the company provides excellent backup and after sales services."

 For more information, go to www.c-tec.co.uk



Patol Relocate to Accommodate Growth

Fire safety equipment and systems specialist **PATOL** has taken a significant step in expanding its market offering with the relocation of the business to larger premises. The company has moved just a short distance from its previous location on Rectory Road in Padworth to Bath Road in the same town in Berkshire and has doubled the size of its manufacturing facility.

Kelvin Miller is Sales Director at Patol and recognises the importance of the move

to the business – "We had outgrown our existing premises and had been looking for some time at a suitable site to enable us to meet both our current needs and also one which provides the potential for continued growth. The move to Archway House is ideal as it provides the extra capacity that we require while also allowing us to remain in the same area, thereby meaning we can retain our experienced personnel and also continue to use the local suppliers

with whom we have established very good working relationships."

The company relocated in January 2015, having already made some changes to the new premises to meet its specific needs. The much larger manufacturing facility, which includes a purpose-built 'fire room' for testing the company's linear heat detecting products and extensive warehousing to accommodate stock, is supported by the administrative offices which have also doubled in size.

New appointment adds to existing experience and expertise

As part of Patol's growth, the company has made a key appointment with Kim Williams joining as Regional Sales Manager for the Middle East. Kim has extensive experience within the fire industry, including more than 13 years with Apollo Fire Detectors. He has worked extensively in international sales, particularly in the Middle East, having operated in the region since 1987.

 For more information, go to www.patol.co.uk



◀ Kelvin Miller (left), Sales Director of Patol, with Kim Williams, Patol's Regional Sales Manager for the Middle East, outside the company's new premises.

FOAM FIGHTS FIRE



MOUSSOL®-FF - ICAO Level B Certified

Used by London Heathrow, London Stansted, London Gatwick Airports

We offer a full range of Internationally Approved, High Performance, Environmentally Compatible Fire Fighting Foams.

24/7 EMERGENCY SUPPLIES PLEASE CALL
+ 49 40 7361680

Liebigstraße 5 · 22113 Hamburg · Germany
Phone +49 40 73 61 68-0 · Fax +49 40 73 61 68-60
E-mail: info@sthamer.com

 www.facebook.com/Dr.Sthamer



www.sthamer.com

What's New with Detection Equipment

With the greatly increased use of detection technology, the leading manufacturers have boosted their research and development efforts to provide the end user with the most efficient and reliable equipment. In this Buyer's Guide we highlight the latest offerings from the worlds leading suppliers.

C-TEC

C-TEC has launched its own range of conventional smoke and heat detectors.

Manufactured at the company's state-of-the-art UK factory and third-party certified to the relevant parts of EN54 parts 5, 7 and pr29 by Intertek, the all-encompassing ActiV range incorporates optical, fixed heat, rate-of-rise and multi-sensor variants.

Easy-to-fit, with a 9-33Vdc operating voltage, ActiV detectors offer outstanding detection performance at a very competitive price. Suitable for use not only with C-TEC's CFP, FP, MFP and EP203 conventional fire panels but with many other manufacturers' control panels, the range also carries the prestigious pan-European 'CertAlarm' System 5 mark.

For more information, call +44 (0) 1942 322744 or visit the company's new YouTube channel at <http://www.youtube.com/user/CTEUKTV> to watch the ActiV launch presentation.

For further information, go to www.c-tec.co.uk



Det-tronics

The FlexSonic® Acoustic Gas Leak Detector hears gas leaks others don't – the instant they occur. The high-fidelity microphone continuously monitors for the distinct ultrasound emitted by pressurized gas leaks, across the widest spectrum of frequencies. Windy, harsh or changing environmental conditions can compromise traditional catalytic and infrared sensors. By the time a gas cloud triggers an alert, it could reach a highly explosive state. The certified SIL-2 capable FlexSonic acoustic gas detector is the first non-contact gas leak detector that recognizes unique sound "fingerprints", analyzes 24 discrete ultrasonic bands, and has nearly instantaneous response.

The device has rugged industrial quality with globally approved explosion-proof stainless steel housing and is suitable for harsh outdoor applications, unmanned operations and extreme temperatures. There is no need to desensitize the unit and no routine calibration is required. You can customize the FlexSonic acoustic gas detector to your challenging environment.

For further information, go to www.det-tronics.com



Apollo

Apollo Fire Detectors Ltd has specialised in the design and manufacture of high quality fire detection products since 1980. In that time, the company has broadened its capability from a straightforward focus on conventional fire detectors to include the manufacture of sophisticated analogue addressable detectors and interfaces for monitoring and controlling equipment in fire protection systems.

Apollo applies the most modern production techniques and has invested in sophisticated manufacturing equipment to ensure consistent high quality products and fast response to customer requirements.

Offering a comprehensive range of fire detection equipment which includes the highly respected designed and manufactured XP95 and Discovery ranges, Apollo now has an exciting new addition to its portfolio.

The new addition is SOTERIA™, the next generation in fire detection technology and is designed to improve detection, reduce false alarms and deliver improved reliability. SOTERIA™ is the start of an on-going technology innovation which will see the product range evolve over the next 2 years.

Alongside SOTERIA™ is Apollo's enhanced protocol aptly named CoreProtocol™, the next generation in fire loop communication from Apollo giving greater control and more loop power. The new protocol builds on the established capabilities of XP95 and Discovery; with forward and backwards compatibility and the ability to manage a significantly increased number of devices.

Through planned expansion, Apollo has reached a leading global position in the market for professional fire detection. With over 3000 international approvals, regional offices in the UK, America, China and Germany along with direct trade into more than 100 countries, Apollo has cemented its position as a world-class fire solutions provider.

Apollo is part of the HALMA group of companies. HALMA is a FTSE top 250 listed PLC with over 40 subsidiaries worldwide, all engaged in specialist engineering activities.

For further information, go to www.apollo-fire.co.uk



Olympia Electronics

Olympia Electronics S.A was founded in 1979. The company is active in developing innovative electronic safety and security systems by using state of the art technology. The company has 165 employees and 10% of these employees work within the research and development department.

The company is the leading company in Greece specialising in the electronics safety and security industry. Olympia Electronics' products are exported in seventy two countries worldwide.

The company's mission is to be the best company in Greece and to be among the best European companies in Safety and Security Electronic Systems industry.

The company philosophy is;

- We produce high quality, state of the art and innovative products in a competitive price level.
- We are a "Easy to do business with" company.
- The company's BSR-2114 system is;
- A modern addressable fire alarm panel with up to 96 zones.
- Suitable for large installation such as malls, hotels and factories.
- With 4 loops and up to 150 points per loop.

It is manufactured in accordance with EN54-2, EN54-4 and operated at 220-240V AC mains power supply.

It offers 2 or 4 fully monitored siren outputs with a rating of 24V / 0,5A and 6 programmable relays as well as a built in network circuit and incorporates a power supply with a rating of 24V/100W and built-in battery charger for 24V batteries with a capacity of up-to 12Ah.

The panels offer an extensive list of adjustments and characteristics for the control of the installed devices and sirens. These parameters can easily be adjusted using a PC based program and the programming of the panel can also be done using a PC.

Messages can be viewed on the big LCD (320x240 pixels) whereas LEDs are used to show basic operations such as alarms, faults and isolated sections. The operation is done using the built-in 16 key keypad and there is also an incorporated safety lock and a thermal printer mounting position with the maximum delay for the sirens being 4 minutes.

For further information, go to www.olympia-electronics.gr

Control Logic

From an idea by the President Giuseppe Nosetti, CONTROL LOGIC IR Flame and Spark Detector came about 40 years ago to cover the need of a very specific market niche.

CONTROL LOGIC started from there coming to date thanks to the high quality of its products and its customer oriented policy.

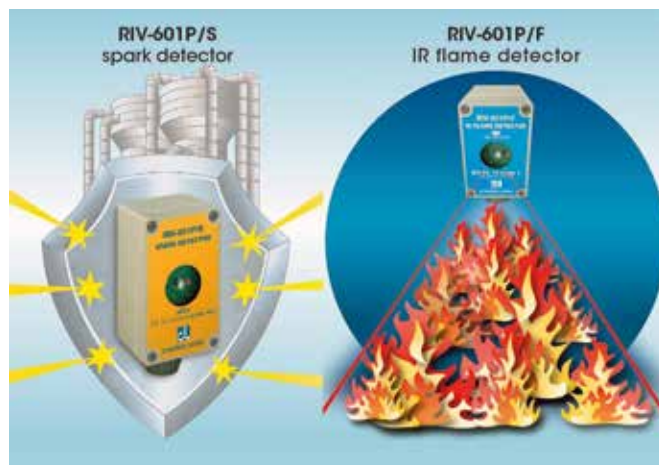
RIV-601P/F IR FLAME DETECTOR is the fastest and most effective fire alarm device for industrial applications, indoors and outdoors, where fire can spread out rapidly due to the presence of highly inflammable materials (fuel, gas, paint, alcohol, paper, etc.) or where vast premises need an optical detector with a great sensitivity and large field of view. In case of live fire it responds immediately and it is able to see even a small size flame at great distance. Highly immune to false alarms it has been created in CONTROL LOGIC laboratories, with a sensor equipped with a special narrow band filter, to perform better than a triple IR flame detector.

It is also available in explosion-proof execution.

RIV-601P/F is EN-54-10 Class 1 certified and Vds approved.

Flame detector's brother is RIV-601P/S SPARK DETECTOR, designed for

dust collection systems to protect storage silos from the risk of fire. It detects sparks with its highly sensitive infrared sensor,



intercepts and extinguishes them in a flash with no false alarms. Spark detector systems have been studied to have a total supervision of the working process (wood, textile, food, leather, paper etc.) in order to assure that sparks will not reach the silo.

Both the detectors have a 10 YEAR WARRANTY and free unlimited after-sales support.



For further information, go to
www.controllogic.it

Scott Safety

Scott Safety, a global leader in gas and flame detection and protective equipment, announces the launch of the Meridian Fixed Gas Detector – the next generation gas detection platform. The first truly universal gas detector, Meridian is ATEX approved and designed to support a full range of toxic as well as combustible sensors.

Unique in the industry, the Meridian Fixed Gas Detector has a single detector head that will accept all sensor types, as well as a single set of accessories, to make it simple to use and maintain. Designed as a plug and play solution, the sensor easily fits into the detector and automatically determines the type of gas to be detected. No special tools or additional personnel are required, thereby minimizing maintenance time and effort.

To help customers reduce operational hazard and maintenance cost, Scott Safety has designed a toxic sensor technology that is linear throughout and range agnostic. This allows for adjustments in sensor range without recalibration as toxic sensors can be bench calibrated in a lab and then installed in the field without the need for further recalibration. The Meridian 3-4 wire platform can also support up to three sensors per transmitter and can be installed remotely from up to 100 feet.

Meeting the highest global regulatory approvals, including ATEX approval for use in explosive atmospheres and with third party SIL2 certification from TUV-Rheinland, the Meridian Fixed Gas Detector ensures best-in-class safety and performance.



For further information, go to
www.scottsafety.com



FireVu

FireVu introduces industry first – Multi Detector combines Flame, Visual Smoke Detection and Temperature sensing technologies in one solution.

The Multi Detector offers businesses a solution that identifies fire danger early and effectively combining three complimentary technologies.

Operators, on-site or remotely based, can quickly assess danger accurately and take appropriate action, which significantly reduces costly false alarms.

Industries where disruption can cause significant losses, such as manufacturing production lines, can now have far greater protection against losing hundreds of thousands of Pounds unnecessarily.

The numerous potential sources of fire in the production process, such as overheating bearings, need to be picked up early, often before operators are aware of the impending danger. The Multi Detector identifies nascent signs of fire risk from unusual behaviour in production such as unexpected increases in temperature.

Many fire services are now demanding commercial enterprises visually verify fires before they will attend, let alone prioritise, an incident. Footage can also be recorded for evidential purposes, while real-time video can direct emergency services efforts.

VSD technology works by identifying the characteristics of smoke patterns, using software algorithms, across a video image to analyse changes in variables such as colour and loss of detail to alert operators early. Flame detection provides additional value if light is already minimal or obscured.

Other thermopile (temperature sensing) systems can lose effectiveness when smoke cools as it dissipates, while the Multi Detector always has other technologies to pick-up danger. In effect a treble knock. Moreover, compared to hand held thermopile devices, the Multi Detector provides constant surveillance and reduces costs by lowering operator costs.

The Multi Detector will be offered across the range of industries where high value assets must be protected. Its ability to detect fire early is especially invaluable in industries such as petrochemicals, manufacturing and air hangars where time is critical in preventing losses.

FireVu was first developed in the mid-1990s and the technology's effectiveness has been regularly refined since. FireVu is a brand of the solutions arm of AD Network Video, part of surveillance monitoring pioneer AD Group.



For further information, go to
www.firevu.co.uk



BIOex
Foam concentrates

*Fight the fire but
protect what's essential !*

**In 2002, BIOex was already committed
to the protection of our environment
by launching the first fluoro-free
foam concentrate.**

Today, BIOex designs and manufactures fluoro-free foam concentrates tested and approved by our customers worldwide:

- ▶ ECOPOL: all-risks
- ▶ BIOFOR: wetting / foaming agent
- ▶ BIO T: the training concentrate

BIOex also offers a complete range of synthetic and protein based foam concentrates.

Certifications: EN1568, ISO7203, ICAO, IMO, VERITAS, LASTFIRE, GESIP, UL, FM, APSAD R12

▶ **www.bio-ex.com**



Introducing EN12845 FIRE PUMP LINE

Patterson Pump Ireland Ltd. specialises in the production of world class fire protection equipment around Europe.

From enquiry stage, right through design, manufacturing, installation and after sales service, Patterson Pump Ireland strives to provide a quality, reliable fire protection system, at the most competitive price.

EN12845 provides a pan-European standard for the design, installation and maintenance of automatic sprinkler systems, and encompasses the basic requirements set forth by local rules into one European Standard.

The new Patterson Pump End Suction product line is the latest addition to the Patterson Sentinel™ range. Cost effective and efficient, these will be used in fire pump packages specifically designed and built to comply with the regulations of European standard EN12845, along with other local rules.



PATTERSON PUMP IRELAND LIMITED
A Subsidiary of Patterson Pump Company U.S.A.
Unit 14, Mullingar Business Park • Mullingar, Co. Westmeath, Ireland
Tel.: 353 44 934 7078 • FAX: 353 44 934 7896
E-mail: info@ie.pattersonpumps.com

www.ie.pattersonpumps.com

Pumping Technology for Tomorrow's World
Patterson



Interschutz 2015 Profile & Showcase

Fire fighting, disaster relief and rescue: these are the main pillars of INTERSCHUTZ 2015. This flagship fair not only boasts a rich tradition in firefighting, but for many years has also been covering a whole lot more ground.

From 8 to 13 June 2015, the gates will once again be opening on the world's most renowned exhibition for rescue workers, firefighters and related professionals – an unparalleled showcase of the latest equipment and innovative approaches to emergency rescue. Some 1,300 companies from 46 countries will be presenting their cutting-edge products and services in Hannover, Germany.

As the leading international event for firefighting and disaster relief, INTERSCHUTZ puts the spotlight on the technologies of tomorrow.

Fire Fighting

All methods of firefighting rely on starving the fire of one or more of the three things it needs in order to keep going – heat, oxygen and combustible material. In that sense, nothing has changed since the days of Ancient Egypt. What has changed is that modern firefighters are a lot more systematic in the way they go about their job. They don't just eliminate the immediate danger; they keep a watchful eye on downstream risk and damage as well. Consequently, modern fire call-outs are a lot less spectacular than in the past.

**INTERSCHUTZ
2015**





That's because speed is not the only requirement; getting fires under control also calls for careful consideration – a measured approach that may sometimes appear slower and more deliberate, but which gets the job done more effectively.

Discover for yourself just how effective today's fire-extinguishing technology can be at INTERSCHUTZ 2015. In halls 13 and 27 and on the open-air site, fire protection specialists from over 40 nations will showcase their innovations and world-firsts in fire protection and firefighting technology.

Main themes

- Vehicles and vehicle equipment
- Equipment for fire stations and workshops

- Associations, organizations, service companies

Disaster Relief

At INTERSCHUTZ 2015, visitors will be able to witness the latest disaster relief and management technologies innovations first-hand. Disaster management mobilisations like these pose major logistical as well as technical challenges. Solutions for meeting those challenges – everything from rugged water purification equipment to innovative software for managing and coordinating disaster relief efforts – will be on show in the Disaster Relief display areas in Hall 26 and on the open-air site at INTERSCHUTZ 2015.



Main themes

- Vehicles and vehicle equipment
- Equipment for technical support and disaster relief
- Associations, organizations, service companies

Rescue

Rescue professionals, manufacturers of vehicles and medical equipment, and paramedics will be presenting the latest and greatest of these in Hall 26 and on the open-air site at INTERSCHUTZ 2015.

In the emergency and rescue services, speed is obviously very important, but so too is having properly qualified and equipped personnel. Emergency and rescue professionals work closely with manufacturers of medical equipment and vehicles to continually optimize the care and service provided by first responders. At INTERSCHUTZ 2015, they will showcase their latest results.

Main themes

- Vehicles and vehicle equipment
- Rescue, emergency, first-aid, and (para)medical equipment
- Associations, organizations, service companies

Toughest Firefighter Alive

The exciting contest for the prestigious "Toughest Firefighter" title is back again in 2015. And this time we are looking for the world champion. Preparations are already in high gear.

Interschutz 2015 Product Categories

- Associations, organizations, service companies, schools
- Equipment for fire stations and workshops
- Fire extinguishing technology, agents
- Information and organization
- Measuring and detection apparatus
- Personal protective equipment
- Rescue, emergency, first-aid, and (para) medical equipment
- Technical literature, model making, fan and gift items
- Technical support and environmental protection
- Vehicles and vehicle equipment

For further information, go to www.interschutz.de/home



Storage Protection Revolution Introducing the N252EC In Rack Sprinkler System

- Protection of Exposed Plastic Commodities
- In Rack Sprinkler Protection with Horizontal Barriers Resulting in Fewer Sprinklers and Reduced Water Demand
- The N252EC In Rack System is the Solution for ASRS (Automatic Storage & Retrieval Systems)
- Enables the Protection of the Highest Storage Facilities with Reduced Cost when Compared to Conventional Systems
- Extended Coverage Sprinklers with a K-Factor of 360
- UL Listed and FM Approved



For All Your Fire Protection Needs

Reliable Fire Sprinkler UK Ltd

www.reliablesprinkler.com
rfs@reliablesprinkler.com



Technology • Quality • Service

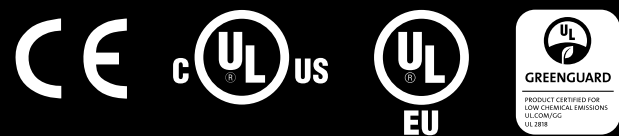
Tel +44 (0) 1342 316800
Fax +44 (0) 1342 314679



OPENING UP A WORLD OF OPPORTUNITIES

The world is open for business. Make sure you are ready with UL certification.

UL has a vast portfolio of certification services for fire safety, chemical emissions and content testing to satisfy the increasing demands of certification that come with globalisation. With multiple accreditations and local engineers in every region, we can help your business meet certification requirements around the globe.



For further information email: info.eu@ul.com or visit: www.ul.com

UL, the UL Logo and the UL certification marks are trademarks of UL LLC © 2015. All other marks are the property of their respective owners.

Maintaining a High Level of Fire Sprinkler Performance

For decades fire sprinklers have proven to be an effective and invaluable tool for protecting property and life from the potentially devastating effects of fire. With the increased awareness and public concern for building safety, there is a growing need for buildings to be fitted with reliable security and safety systems.



Kerry M. Bell

While fire sprinklers have been used to reduce the loss of life and property from fires for more than 100 years, the expanded end use applications and changing installation environments for these products require on-going monitoring and assessments of the construction and performance requirements included in safety standards to maintain the desired high level of safety.

As a part of Underwriters Laboratories Inc's (UL's) standards development process, UL routinely considers new technology and performance in field use environments to assess the need for revision of product requirements or installation standards. Since the year 2000, UL has identified several opportunities for these improvements, and took action to enhance the performance requirements for fire sprinkler products.

Sprinkler Standards and Requirements

On a global basis, there are several product standards for sprinklers published by various organizations. For example, ISO recently published new editions of the International Standards, ISO 6182-1, "Fire protection – Automatic sprinkler systems – Part 1: Requirements and test methods for sprinklers"¹ and ISO 6182-10, "Fire protection – Automatic sprinkler systems – Part 10: Requirements and test methods for domestic sprinklers"². The European standard for sprinklers published in the English language is BS EN 12559-1, "Fixed firefighting systems- Components for sprinkler and water spray systems – Part 1: Sprinklers"³.

This article is focused on requirements included in sprinkler standards published

by UL. Currently, UL publishes several standards addressing fire sprinkler products, but the three primary standards include the following:

- Standard for Automatic Sprinklers for Fire-Protection Service, ANSI/UL199⁴
- Standard for Residential Sprinklers for Fire-Protection Service, ANSI/UL1626⁵
- Standard for Early-Suppression Fast-Response Sprinklers, ANSI/UL1767⁶

The sprinklers covered by UL's standards are generally intended to be installed in accordance with the nationally recognized installation standards published by the National Fire Protection Association (NFPA) including the Standards for Installation of Sprinkler Systems, NFPA 13⁷; Installation of Sprinkler Systems in One-and Two-Family Dwellings and Manufactured Homes, NFPA 13D⁸; and Installation of Sprinkler Systems in Low-Rise Residential Occupancies, NFPA 13R⁹. The Standard for Inspection, Testing and Maintenance of Water-Based Fire Protection Systems, NFPA 25¹⁰, contains comprehensive requirements for assessing the ability of the sprinkler system to operate as intended on an on-going basis.

The fire sprinkler community is generally aware of the fact that the industry has been very active within the last 20 years or so in developing new sprinkler technology, including a broad range of large K-factor storage sprinklers. While it is important for the product standards to be updated to address new technologies, the context of this article is focused on several requirements that have been adopted into UL's standards that are intended to enhance the general

Kerry M. Bell is Principal Engineer, Fire Sprinkler and Pump Equipment for UL LLC.

operating performance of sprinklers in field environments.

As would be expected, UL's sprinkler standards contain tests to evaluate the capability of these products to distribute water in such a manner that will control or suppress fires. However, many are not aware that these standards also include a broad range of tests to investigate the ability of sprinklers to operate and perform as intended under stressed and adverse field conditions. In fact, each of these standards contains more than 35 different performance tests. The following is a brief description of just a few of the tests that have been in the sprinkler standards for decades:

- Resistance to leakage and rupture
- Tests to evaluate the ability of a sprinkler to control or suppress a fire
- General corrosion tests that expose samples to salt spray, hydrogen sulfide and carbon dioxide-sulfur dioxide atmospheres.
- Stress corrosion tests for copper alloy and stainless steel components.
- Exposure of samples to 98% relative humidity at 93 °C (200 °F).
- High temperature exposure tests for each temperature rating
- Vibration exposure
- Impact resistance
- Rough usage

Although these tests are considered to be very challenging, it is important to continuously monitor the performance of sprinklers in actual field use environments to maintain a level of confidence that the sprinkler standards continue to be relevant and effective in achieving the desired level of safety and performance.

Examples of Revisions to UL's Sprinkler Standards

Based upon reports from property owners, sprinkler contractors, authorities having jurisdictions and others, fortified by UL's testing of thousands of sprinkler samples from hundreds of installation locations, two key areas for enhancing sprinkler operation performance were identified in the early 2000's. These revisions included new additional construction and performance criteria related to the release of the water seal assembly and resistance to premature (unwanted) sprinkler operation.

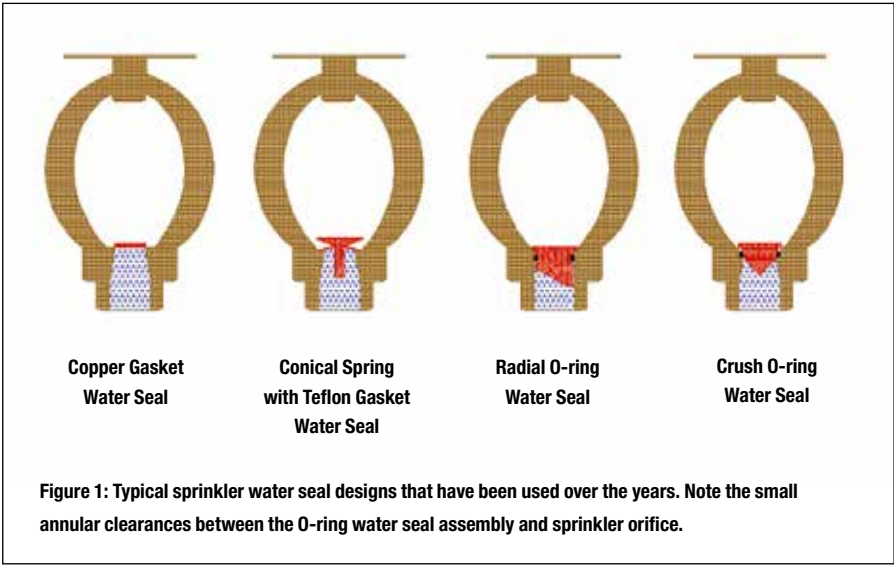


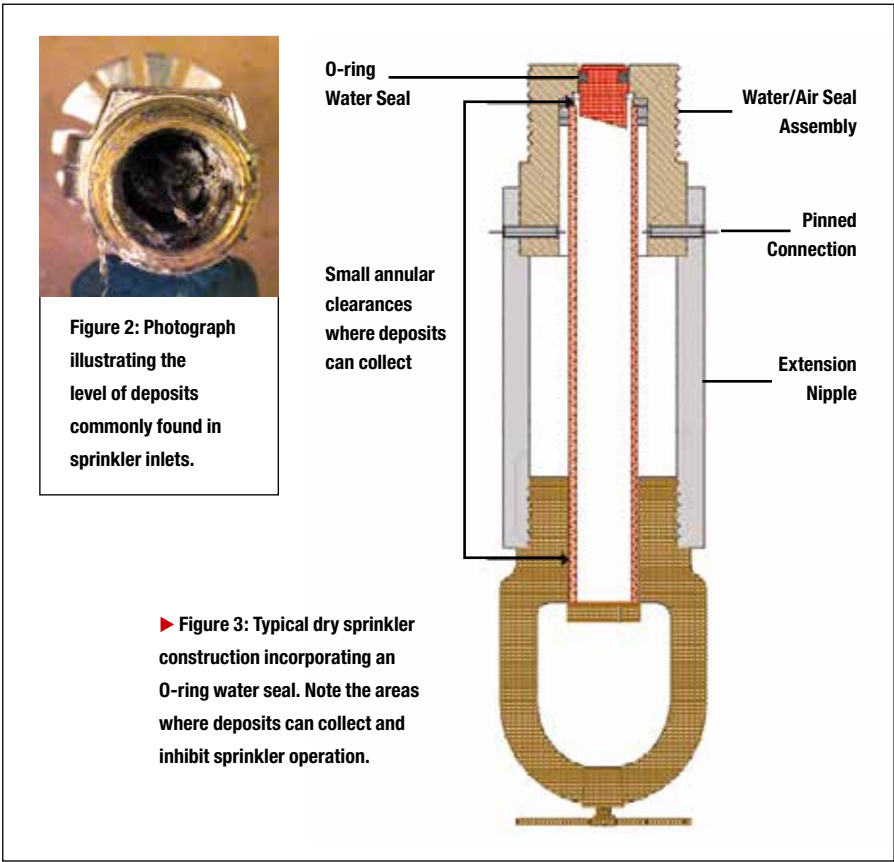
Figure 1: Typical sprinkler water seal designs that have been used over the years. Note the small annular clearances between the O-ring water seal assembly and sprinkler orifice.

Release of Water Seal Assembly

Until the early 1960's, the prevention of leakage from sprinklers was primarily achieved through the use of a metal-to-metal compression seal arrangement typically employing the use of a copper gasket. Today, a conical spring with a Polytetrafluoroethylene (PTFE) film gasket is the most prevalent means used in sprinklers to prevent leakage. A schematic of typical water seal configurations used over the years is provided in Figure 1.

Since the late 1990's, UL has conducted operational tests on a large

number and type of O-ring sealed sprinklers sampled from field installations. In some locations all samples operated as intended, and in others, all samples experienced elevated operating pressures. While the operational test results of these sprinkler types varied substantially in the different installation locations UL's testing of these sprinklers revealed that a large number of sprinklers utilizing a dynamic O-ring type seal required elevated inlet pressures for the water seal to release from the sprinkler and allow it to discharge water. In fact, in some cases the O-ring



► Figure 3: Typical dry sprinkler construction incorporating an O-ring water seal. Note the areas where deposits can collect and inhibit sprinkler operation.



7595 Gadsden Hwy. Trussville, AL 35173 ♦ Ph: (205) 655-3271 ♦ Fax: 1-800-654-5980 ♦ e-mail: sales@amerex-fire.com

Amerex Corporation

Model 775 150 LB. 3M™ Novec™ 1230 WHEELED FIRE EXTINGUISHER



- Environmentally friendly 3M™ Novec™ 1230 Clean Agent (0 ODP - 1 GWP)
- Brass, chrome plated operating valve
- 125 PSI Operating Pressure
- Heavy duty steel cylinder, carriage and hose hanger assembly
- Quick release 40 ft. discharge hose with brass/chrome plated ball type shut-off nozzle
- Pressure gauge protected by a stainless steel gauge guard
- Corrosion resistant lime/yellow polyurethane paint finish
- Large color coded mylar instruction labels
- Operating temperature range: -40° to +120° F.
- 6 year manufacturer's warranty

SPECIFICATIONS	150 LB. Novec™ 1230
Model Number	775
Agent	Novec™ 1230
UL Rating	3A:80B:C
Capacity (lbs.)	150
Shipping Weight (lbs.)	375 (filled)
Discharge Time (sec.)	22
Cylinder - DOT 4BW240	125
Operating Press (psi)	
Test Pressure (psi)	
Burst Pressure (minimum - psi)	
Discharge Range (ft.)	30
Hose Length (ft.)	40
Hose Diameter (in.)	1.0
Wheels (Semi-pneumatic) (in.)	16 x 4
Height (in.)	62
Width (in.)	29
Depth (in.) - Model 775 / 776	40 / 41

Model 776 available with 36" rubberized wheels

type water seal did not release even when 6.8 bar (100 psig) was applied to the inlet.

While O-ring seals were utilized in both wet and dry type sprinklers, the majority of dry sprinklers manufactured between 1970 to the early 2000's were constructed with O-ring water seals. Accounting for a small percentage of all installed fire sprinklers, dry sprinklers are generally found in locations having harsh environmental conditions, characterized by wide variations in temperature, humidity and corrosive conditions, such as car ports, parking garages, loading docks, outdoor canopies and walkways. Results from operational tests conducted on thousands of O-ring sealed dry sprinklers sampled from field installations indicate that approximately 50 percent of the sprinklers experienced inhibited operating characteristics primarily due to the water seal assembly not releasing in the intended manner. The analyses of

wet and dry sprinkler samples received from the field installations indicated that a broad, but not clearly defined, spectrum of materials and chemicals may reside within sprinkler inlets including various types of oils, surfactants, chemicals associated with water potability and pipe sealing compounds, hard water deposits, sand, dirt, etc. These materials and chemicals may act to accelerate the corrosion process and inhibit the intended movement of sprinkler operating parts.

Based upon these analyses, UL identified four key factors considered to be contributing to the inhibited sprinkler operation:

- The collection of corrosion and other products in the small annular clearances between operating parts.
- Transfer (sticking) of the O-ring material to the mating sealing surface.
- Dezincification.

- Micro-leakage past the O-ring water seal causing corrosion and deposits to form on the non-water side of the seal.

To address these concerns, several revisions to UL's sprinkler standards were adopted in 2001. The table below summarizes the revisions that were adopted related to enhancing the operating performance characteristics of the water seal assembly. Extensive data generated as a result of UL's operational testing of sprinklers from field installations subsequent to the implementation of these revisions have confirmed the need for these additional requirements.

Resistance to Premature Sprinkler Operation

In the early 2000's, UL received an increased number of field reports of sprinklers discharging water without an apparent cause for the operation. These situations are commonly referred to as premature sprinkler operation. Dry sprinklers installed in cold storage facilities and glass bulb sprinklers were the focus of many of those concerns.

In regard to dry sprinklers installed in freezers, it was determined that ice build-up external and internal to the sprinkler had the potential to apply excessive stresses to the operating parts. Concerning the potential for the build-up of ice external to the sprinkler, proper installation of the sprinkler is important. It is critical for the hole that accommodates the installation of the dry sprinkler to be properly insulated and sealed. If the annular space between the sprinkler and freezer is not sealed properly, substantial quantities of ice can build-up around the sprinkler due to condensation and hot, moist air entering the freezer. Figure 5 is a photograph of a dry sprinkler that was not properly sealed around the sprinkler penetration. These situations should be readily visible during periodic sprinkler system inspections.

Based upon the same air movement principle, ice may build-up internal to the dry sprinkler if a sprinkler's water seal assembly and extension nipple connection is not completely sealed. To prevent air interchange within the sprinkler and the resulting build-up of ice internally, UL's sprinkler standards require this connection to be completely airtight. More detailed information on dry sprinklers installed in



▲ Figure 4: Photograph illustrating the level of deposits created by the new laboratory deposit-forming test. After exposure to the deposit-forming atmosphere, the water seal assembly is required to release as intended with an inlet air pressure of 0.48 bar (7 psig).

freezers is contained in a paper entitled "A Technical Analysis: The Use and Maintenance of Dry Type Sprinklers."¹¹ While glass bulbs have been used as heat responsive elements in sprinklers for decades, these bulbs have been miniaturized in recent years to enhance the sensitivity to fire conditions. Considering the typical phases of a sprinkler's life, there is ample opportunity for damage or overstressing of glass bulb to occur. Figure 6 illustrates several potential sources of damage to glass bulb heat responsive elements and causes for the premature sprinkler operation.

To address the potential source of damage related to manufacturing, UL's sprinkler standards include a test to determine that the integrity of the glass bulb is maintained after the sprinkler has been fully assembled and subjected to all the other production testing at the factory. This requirement provides a level of assurance that sprinklers are shipped from the factory with a damage-free, fully functional glass bulb. Also, to minimize

▼ Figure 6: Chart of several potential sources of damage to glass bulb heat responsive elements and causes for unwanted discharge of sprinkler system water.



▲ Figure 5: Photograph of dry sprinkler not properly sealed around the sprinkler penetration causing external ice build-up. This condition should be readily visible during an inspection of the sprinkler system.

the potential for glass bulb damage due to the extensive handling that typically occurs after the sprinkler has left the manufacturing facility, UL's sprinkler standards require all glass bulb sprinklers be fitted with protective covers.

Summary

The timely updating of requirements in safety standards is imperative to maintain the Standards' relevancy toward achieving safety objectives. While UL's sprinkler standards were the first to include the requirements described in Tables 1 and 2, the importance of applying these requirements to sprinklers has been freely shared with the fire protection community. Just recently, most of the additional sprinkler construction and performance requirements described in this article have also been adopted into the latest editions of the ISO 6182-1¹ and ISO 6182-10².

Fire sprinklers have established an outstanding record of protecting property and life over many decades, and the overall effectiveness of sprinkler system protection continues to be at a very high level. With the vigilance and collaboration of enforcers, insurers, designers, installers, manufacturers, standards

References

1 ISO 6182-1, "Fire protection – Automatic sprinkler systems – Part 1: Requirements and test methods for sprinklers", International Organization for Standardization, Geneva, Switzerland, Third Edition Dated 2014-01-15

2 ISO 6182-10, "Fire protection – Automatic sprinkler systems – Part 10: Requirements and test methods for domestic sprinklers", International Organization for Standardization, Geneva, Switzerland, Second Edition Dated 2014-05-15

3 BS EN 12559-1:1999, "Fixed firefighting systems- Components for sprinkler and water spray systems – Part 1: Sprinklers", British Standards Institute, London, United Kingdom

4 "Standard for Automatic Sprinklers for Fire-Protection Service", ANSI/UL199, Underwriters Laboratories, Inc., Northbrook, IL, 2013.

5 "Standard for Residential Sprinklers for Fire-Protection Service", ANSI/UL1626, Underwriters Laboratories, Inc., Northbrook, IL, 2012.

6 "Standard for Early-Suppression Fast-Response Sprinklers, ANSI/UL1767, Underwriters Laboratories, Inc., Northbrook, IL, 2013.

7 "Standard for the Installation of Sprinkler Systems", NFPA 13, National Fire Protection Association, Quincy, MA, 2013 Edition.

8 "Standard for the Installation of Sprinkler Systems in One-and Two-Family Dwellings and Manufactured Homes", NFPA 13D, National Fire Protection Association, Quincy, MA, 2013 Edition.

9 "Standard for the Installation of Sprinkler Systems in Low-Rise Residential Occupancies", NFPA 13R, National Fire Protection Association, Quincy, MA, 2013 Edition.

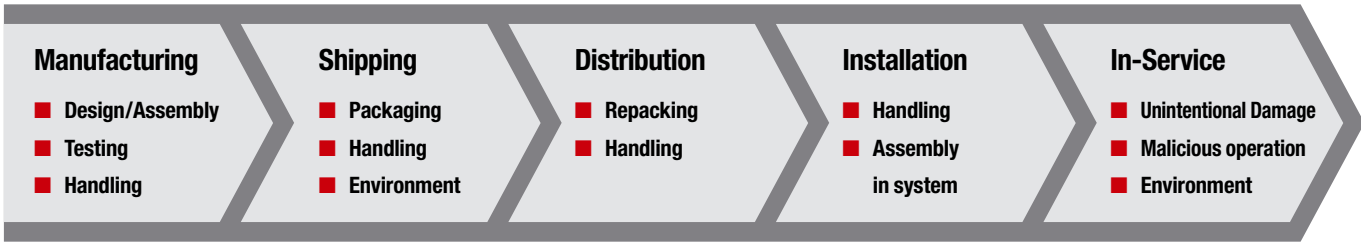
10 "Standard for the Inspection, Testing and Maintenance of Water-Based Fire Protection Systems", NFPA 25, National Fire Protection Association, Quincy, MA, 2014 Edition.

11 Golinveaux, James, "A Technical Analysis: The Use and Maintenance of Dry Type Sprinklers," Tyco Fire & Building Products, Lansdale, PA, 2002.

development organizations, certifying organizations and others, the high level of safety provided by fire sprinkler systems can be maintained and enhanced even though fire challenges and installation environments continue to evolve. The on-going efforts to expand the usage of the fire sprinklers as a protection tool will make our world a safer place to live.

For further information, go to www.ul.com

Summary of Revisions to UL Sprinkler Standards Related to Enhancing Sprinkler Operating Characteristics	
Revisions Adopted in 2001	Rationale for New Requirement
Hydrocarbon and Water Immersion Exposure	Significant levels of hydrocarbons and water deposits have been found in sprinkler inlets sampled from field locations. Sprinklers are required to operate as intended after these exposures.
Ban on Use of Dynamic O-ring Water Seals	The primary contributor to elevated operating pressures measured in O-ring sealed sprinklers were (1) the collection of corrosion and other deposits in the small annular clearances provided between the operating parts, (2) transfer (sticking) of the O-ring material to the mating surface and (3) small leakage past the O-ring water seal causing deposits to develop. Figure 1 illustrates the small annular clearances typically associated with O-ring sealed sprinklers. Figure 2 illustrates the level of deposits commonly built-up in the inlet of a sprinkler. This type of water seal has not been permitted in UL certified sprinklers since 2003.
Dry Sprinkler Deposit Loading Test	Dry sprinklers are can be installed in harsh environments and corrosion deposits have been observed on the internal operating components. Figure 3 illustrates the areas within the dry sprinkler assembly where deposits have been observed. Figure 4 is a photograph of a dry sprinkler that was subjected to the laboratory deposit-forming test. After this exposure, the sprinkler is required to operate as intended.
Dezincification Test	Some sprinklers received from field installations showed evidence of dezincification, which is the selective removal of zinc from a copper alloy. Dezincification can weaken the pressure retaining capabilities of sprinkler parts, and potentially cause leakage, loss of structural integrity or inhibited operation. This test establishes a minimum level of resistance to dezincification and is applicable to all copper alloy materials containing more than 15% zinc exposed to the sprinkler system water.



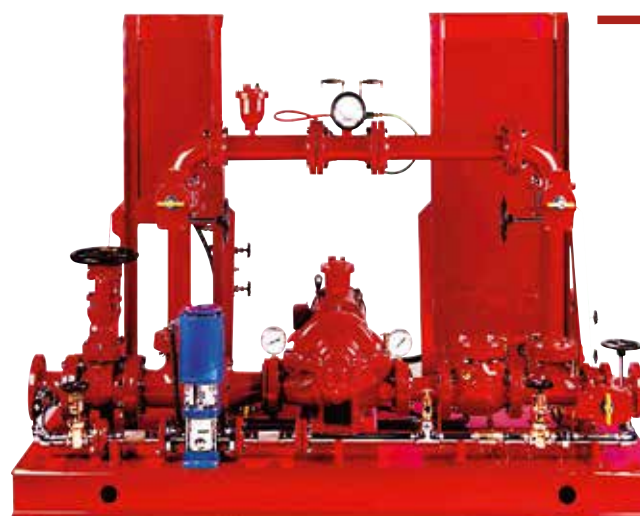
FROM INDIVIDUAL PUMPS TO TOTAL SYSTEMS,

WE HAVE YOU COVERED.



Pentair, a globally-recognized leader in fire pumps, has you covered with a full range of UL-Listed/FM-Approved fire pumps. Featuring Aurora and Fairbanks Nijhuis horizontal and vertical split case, end suction, vertical inline and vertical turbine pumps, Pentair provides pumps with the broad operating capabilities to address applications across the globe. Whether the installation is a new building, small space, or retrofit, Pentair fire pumps provide an efficient, cost-effective design solution.

The Aurora Edwards Series offers a rotary gear pump built specifically to address the demanding requirements of foam concentrate and water mist fire protection systems. Driven by electric motor, diesel engine, or water turbine (Pelton) drive, the Edwards pumps can address stationary or mobile applications. Pumps are available either as nonlisted pumps or UL-Listed/FM-Approved fire pump packages.



In addition to a full line of listed fire pump packages, Pentair also offers custom and pre-engineered fire pump systems.

These systems are factory assembled and tested, leaving only pipe connections, power connections and structural base grouting to be completed on site. All fire pump packages are built to NFPA 20 & NEC standards with UL Listed/FM Approved components.



Installation of Passive Fire Protection

We face many challenges as an industry, where we must strive to raise the bar by addressing the practical aspects of installation and maintenance where we most commonly get it wrong.



Kieron Tierney-Jones

FIRAS currently has over 250 UK members and is one of the UK's largest third-party certification schemes for the installation of passive fire protection (PFP). Running a large team of site inspectors across the UK, I see where we, as an industry, get it wrong, but also where we get it very right. Unfortunately, the focus is all too often on the negative and failings like the highly publicised cases of Lakanal House and Rose Park Care Home overshadow the very professional work done in making our public buildings and communal areas a safer place to live and work.

The Mind Set

When engaging and working with installers of PFP, I am always keen to speak with senior management and directors to gauge their mind-set and their approach. This is because – as with all organisations – the services companies provide and the standards they deliver come from the top; and inevitably the companies that stand by the core principles of improving life safety and adhering to PFP standards are the ones that thrive. These are the

companies that maintain not only strong brand recognition but also an excellent reputation in the industry.

A recent survey by IFSEC Global suggests there are many building owners and duty holders who are either ignorant, apathetic or in denial regarding the state of their premises or properties. Owing to a lack of interest, understanding or commitment there are, unfortunately, many unsafe buildings in the UK. However, it is important to understand that fire safety and proper installation and maintenance of passive fire protection are of pivotal significance and it is one of our challenges as an industry to engage more actively with duty holders and building owners to ensure standard are adhered to.

Third-Party Inspection

Duty holders are increasingly seeking the advice and support of third-party inspection services to ratify passive fire protection on site. The responsibility for this falls on the local building control officer. However, the time required on site to both observe all phases of a build and go through the required level of



▲ Unsealed service openings in a gypsum wallboard partition.

Kieron Tierney-Jones is FIRAS Inspection Manager at Exova Warrington Certification.



▲ Expanded Polyurethane foam sealing cables through a gypsum wallboard partition.



► Inadequate sealing around electrical cables passing through a partition wall.

detail, stretches the resource of local authorities. Additionally, problems develop within the built-in fire protection that could be installed when the building control officers are not on site and so is harder to see. As a result, building control cannot always pick up fire protection issues in new buildings; it is often other non-fire related issues that are noticed, resulting in questions being asked around the integrity and competence of the builders.

The case of Priory Hall in Dublin highlights an example of where non-fire-related problems within the building triggered an invasive investigation. The result was that 256 people were removed from the premises due to inadequate fire stopping in the external cavities of the building.

Pacific Wharf in London, a luxury home complex beside the River Thames, is strikingly similar to the example in Dublin. From the very beginning of occupancy, residents complained about damp and mould issues, which alerted authorities to the fact that there may have been construction failings. However, what is more concerning is that the NHBC – the UK's leading provider of new home warranties – signed off the building as a quality construction under its home assurance scheme. Fortunately, the issues of inadequate fire stopping were caught early and following extensive and prolonged remedial works, the building was reoccupied.

UK fire safety legislation is risk-based and focuses on life safety. It requires the person with control over a building to complete appropriate risk assessments including a full evaluation

of the passive fire protection, ensuring the building's safety through the full life cycle of the build. This gives that person liability, which is why early engagement with third-party inspection services is pivotal to support successful project procurement and implementation.

FIRAS inspectors are now more heavily engaged than ever in supporting UK businesses assess their building projects and help protect life safety, reducing annual incidents and fatalities.

The Devil is in the Detail

PFP products are 'built-in' to the construction of a building in order to restrict the growth and spread of fire. The flammability of wall and ceiling linings must be controlled as they will stop fire spreading rapidly throughout a building, dividing it into fire-resisting compartments and providing protection that can prevent premature collapse. As such, the proper installation of PFP is key.

PFP products on the market include: fire doors; fire-resisting walls, floors and ceilings; fire-resisting ducts and dampers; fire-stopping; and fire protection to steelwork. The measures requiring inclusion of PFP in a building are found in Building Regulations and are one of the primary considerations for any developer. In the UK, information can be found in the following statutory guidance documents:

- England and Wales
– Approved Document B 2006.
- Scotland
– Technical Handbook B 2010.
- Northern Ireland
– Technical Booklet E 2005.

PFP covers many different phases of construction and will incorporate different types of fire safety products that perform a variety of fire stopping roles within a building. The main areas of fire stopping and the critical success factors to their successful installation are highlighted below:

Structural Steel Protection

The fire protection system chosen will be dictated by a number of factors that will achieve the required fire rating: environmental conditions such as humidity and temperature during application, both prior to occupation and during use; robustness (impact damage); consideration of future adaptations; fitting out (partitions); capital and maintenance costs. Some of these considerations may influence the selection of materials.

The designer usually provides a full specification if masonry or in-situ concrete is chosen as the fire protecting media. In cases where proprietary spray or panel systems including pre-cast concrete are used, the designer indicates the required fire rating to the specialist installer who will then select the materials and specification accordingly.

Where steel protection is required, the issue of corrosion protection has to be considered. While some PFP systems do not require the use of anti-corrosion primer, others require that a compatible anti-corrosion priming system is applied prior to installation of the fire protection. In order to properly co-ordinate the steel protection programme, guidance should always be sought from the PFP manufacturer.

Images courtesy of Exova

The risk is real. How ready are you?

Tested and Trusted over 30 years

- UL 1709 (ASTM E 1529) hydrocarbon pool fire
- ISO 22899-1 jet fire
- NFPA 58, ANNEX H (NFPA 290) torch test
- ASTM E 119 (UL 263) cellulosic fire
- API 22183 6.3.5 recommended practice

Plan for the worst. Protect with the best. 3M™ Interam™ Endothermic Mat.

3M E-Mat offers maximum fire protection for critical electrical and structural components, limiting the impact when fire does occur. And it offers important advantages over epoxy and lightweight cementitious coatings or ceramic fiber.

- **Fast and easy to apply and inspect** – minimizes human error and doesn't need to be shop-applied
- **Clean** – no need to mask or drape areas to prevent a mess
- **Can be applied in any environment** regardless of heat, cold or humidity

Learn about all of the advantages and watch the video:

www.3M.com/Emat



When exposed to high temperatures or flame, 3M's endothermic technology releases chemically bound water to slow heat transfer and reduce the rate of temperature rise.

3M

3M and Interam are trademarks of 3M. Used under license in Canada. © 3M 2015. All rights reserved.



◀ Inadequately installed Coated Batt and mastic around cables in a cable tray through a partition wall.

Fire-Resisting Doorsets

The designer specifies the fire resistance for fire-resisting doorsets and leaves it to the contractor to select an appropriate supplier. The fire rating is dictated by the rating of the compartment wall or corridor the door is in. It is recommended that only doors covered by third-party certification, which includes factory production control, should be used. Doorsets should be included on a schedule that describes the swing, the size of opening, appearance, and requisite building hardware. Current practice is that the building hardware (ironmongery) is often selected by a member of the project design team and included as a prime cost (PC) sum.

Certain procedures may follow the alternative route of selecting catalogue items, usually covered with the caveat of 'equal and approved,' in order to preserve the ideals of fair competition and choice. Taking these as the primary criteria can lead to incompatible specifications, which are further down-graded by the main contractor or the purchaser, for example, doorsets supplier, sub-contract installer etc. Confirmation of the fire performance compatibility must be obtained from the door manufacturer and / or the hardware supplier for all components. To achieve best practice, the final building hardware schedule should be prepared by an architectural ironmonger who has specialist knowledge regarding the overall requirements for functionality and performance.

Fire-Resisting Shutters

Fire-resisting shutters are used to protect openings in compartment walls ranging in size from serving hatchways upwards and are designed or specified in the same way

as fire doors. They are usually operated on a fusible or smoke activated link basis or connected to the fire alarm system and as such require regular testing.

Compartment Walls & Floors

It is building designers who usually specify the construction of compartment walls and floors. Besides carrying capabilities and stiffening of the general structure of the building, floors in particular carry the crucial function of fire separation. Concrete floors will normally be designed to provide the required fire rating. Steel beams and some composite flooring such as the use of permanent corrugated steel shuttering, usually require additional fire protection, that is, bolt on or sprayed passive or intumescent systems, which will be the subject of a performance specification prepared by the designer and then supplied and fixed by a specialist.

The designer will fully specify the structural performance of load bearing compartment walls. The fire resistance may be covered by the structural specification, but a specialist will provide details if additional protection is needed. Partition or non-load bearing walls may also be fully specified, although if a stud system has been specified, the supplier will be expected to certify that the required performance has been achieved.

Ceilings

Fire-resisting ceilings should be constructed to fully satisfy the manufacturer's instructions and allow for parts of the ceiling to be removed for maintenance. Light fittings, and other penetrations through the ceiling, must be appropriate for the type of ceiling.

Cavity Barriers

The successful installation and maintenance of cavity barriers is dependent on the supports: top fixing, edge fixing and jointing systems. Cavity barriers are usually tested in fire conditions for a maximum of three-metre vertical drops. Higher drops are viable providing the barrier and support/fixing systems can accept the higher load of the extended drop and that the application at longer drops is covered by assessment or third-party certification. In many cases, this may require additional support elements for which manufacturers can provide the necessary details. Unless clearly defined, it is possible for an inappropriate sub-contractor to be given the task of installing cavity barriers.

Fire Stopping

Fire stopping materials are sealing products which take up imperfections of fit or design tolerance between the fire-resisting fixed elements of a building to restrict the passage of fire and smoke. They continue to take up the imperfections of fit at all times and have the same fire rating as the fixed elements of which they form a part. In reaction to a fire condition they swell, spread or deform to achieve their performance.

With the financial constraints on many businesses, it is often fire safety that is subject to belt tightening. As many property owners and developers are trying to get to grips with their building stock, and assessing their passive fire protection, the key is to get advice that is both competent and all encompassing. The best advice will include fire risk assessment, fire legislation, site inspection services and schedules of remedial work which may be required.

Fire protection is not just an add-on to a building; it is integral to its design and implementation. It is also something that cannot be ignored; genuine ignorance is not an excuse when so many lives are at stake.

For further information, go to www.exova.com

DEFINING INNOVATION *since* 1919



INSTALLATION-READY™ TECHNOLOGY
FireLock EZ® Style 009N Coupling

victaulicfire.com



8267 REV A 07/2014
VICTAULIC IS A REGISTERED TRADEMARK OF VICTAULIC COMPANY.
© 2014 VICTAULIC COMPANY. ALL RIGHTS RESERVED.



The ultimate smoke detector.



The ultimate...

- Detection — very early warning with increased sample hole coverage and reduced nuisance alarms
- Future-proof platform, with expandable hardware modules for additional capabilities & downloadable software analytics for more effective response
- Connectivity with WiFi, Ethernet, USB, iVESDA mobile apps & more
- Backward compatibility, both physically and electronically
- Protection of your investment, with increased longevity and lower total-cost of ownership



Stay protected and connected with the iVESDA mobile application for iOS and Android devices

VESDA® 
xtralis™

**You've never seen
anything better.
You never will.**

Learn more: www.xtralis.com/ultimate

Fire in the Hole

Railway stations combine large numbers of people with considerable fire loads from multiple trains and complex electrical systems, so fire protection in the station environment is inherently complex. However, if that station is underground, the challenges intensify significantly.



Michael Barnes

When a fire occurs in an underground environment, the lack of space available is a double impediment. On one hand, it can intensify the situation by causing a more rapid spread of fire through radiative and connective heat transfer, and by severely limiting the opportunity for smoke to dissipate. On the other hand, emergency responses can be rendered slower and more difficult by the limited number and size of routes available for evacuation and fire brigade access, and by physical obstacles to the operation of radio communication systems.

To understand how easily a fire can deteriorate underground, one need only look at the 1987 King's Cross Tube station fire in London. What began as a relatively small escalator fire quickly spread and flashed over to engulf a ticket hall, killing 31 people and injuring dozens more.

The subsequent Fennell Report identified a list of failures contributing to the tragedy. These included poor maintenance of escalators. A lack of cleaning had allowed layers of grease, dust, fibre and debris to accumulate on the running tracks, and gaps to develop between the treads and skirting board allowing matches and cigarettes to be dropped into a 'seed bed' of flammable material.

Making matters worse, the smoking ban in stations was poorly enforced. No evacuation plan was in place; no one person had overall responsibility for safety, and poor staff training resulted in ineffectual action and communication. As a result, policemen handled evacuation during the incident, but chose an unsafe route due to lack of familiarity with the station. The public address (PA) system was not used, and much of the control room equipment not operational.



▲ The best evacuation routes are not always obvious when underground. Signage, emergency lighting and communications systems play a major role in passenger safety.

Michael Barnes is Senior Fire Engineer at Mott MacDonald.



Image courtesy of www.mottrac.com

Underground Engineering Challenges

The hazards demonstrated at King's Cross played a central role in informing the UK rail industry's extensive efforts since 1987 to make fire safety a priority in the design and operation of underground stations. London Underground has become an industry leader in fire protection since embracing and implementing Fennell's recommendations.

As always, prevention is preferable. Materials selection is crucial; mature rail sector clients typically maintain registers of approved products, allowing engineers to propose new materials for inclusion.

Increasingly, operators are now incorporating retail space into underground stations, thereby introducing new materials and new staff in need of training and regular inspections. Fire engineers must consider how retail concessions increase fire load and alter passenger behaviour – for example, making them more likely to loiter on concourses – and in turn affect the station's risk profile.

If a fire ignites, mitigation strategies come into play. Ventilation is particularly important in platform areas where trains meet crowds of passengers in a confined space, often at some distance from the surface. Ideally, ventilation measures will be placed directly above and even below the tracks, to limit the impact of a potential train fire. Transformer rooms are another

high risk 'hotspot', due to the presence of flammable oils.

However, underground stations offer very limited ventilation opportunities. The interventions used in above-ground stations – such as automatically opening windows – are obviously out of the question, so ducts to the surface are required, adding to the project costs. Sufficient space must be provided around ducts to allow for maintenance activities, and if ducts' length must be extended to reach an appropriate surface outlet location, costs mount even higher.

As a result, underground stations are likely to rely more heavily on compartmentation and suppression through, for example, gas or sprinkler systems. Even so, the ventilation challenge rears its head again, as any gas deployed for suppression must eventually be purged from the station.

Human Factors

Human responses are decisive in underground fire situations. A successful outcome relies on station staff being well trained in emergency response protocols, such as the immediate actions required upon report of a fire. In order to appreciate the reasons behind these practices, staff must understand the 'big picture' of how the station as a whole operates in an emergency situation. Without regular reviews and drills, this training and knowledge can go astray.

Fire detection and warning systems in underground stations are generally similar to those above ground. However, raising the alarm is only half the battle. Evacuating underground stations can be complex, given that underground stations are typically like inverted funnels: a vast space exists below the ground, but access to and from the surface is only possible through relatively small openings.

With underground stations often having complex layouts, the ability to discern the safest and fastest evacuation routes from any given point can be a matter of life and death. Passengers tend to instinctively attempt to exit using the same route by which they entered the station. If this is not the safest option, it is essential that staff are able to identify and communicate that fact.

The number of people within a station fluctuates as passengers continually enter and exit at both platform and street level. Where there is missed headway between trains, platform crowds can quickly swell beyond a safe volume, and this can rapidly become a critical issue in the event of a fire. Swift and safe evacuation routes from underground stations – with sufficient emergency lighting to account for the lack of natural light, and including fire-safe lifts for people with restricted mobility – are therefore of crucial importance.

Provisions are also necessary for safe and expedient fire brigade access to underground stations. Where platforms are situated deep underground, a fireman's lift may be necessary. Ideally, a pressurised corridor will be available to guarantee an access route without smoke ingress, and water main connections for hoses will be provided in firefighting lobbies and out on platform and concourse levels where necessary. Fire brigades should, of course, be consulted on all provisions to aid their response.

Compromise and Retrofit

Implementing these principles on a new-build station is fairly straightforward, although conflict may arise between, for example, the need for a wider evacuation staircase and the desire to limit excavation costs by 'shaving off' space. Compromise may be necessary to some extent, but fire engineers have a responsibility to calculate the minimum acceptable measures, and stand their ground to ensure that design solutions are compliant and the new station meets requirements.

We help suppression system OEMs meet regulatory standards with superior electromagnetic solutions.

Call us with your challenge.

CUSTOM AND STANDARD COMPONENTS
ULTRA-FAST RESPONSE
HIGH DURABILITY
RESETTABLE
UL RECOGNIZED COMPONENT
CUSTOM CONFIGURATION
ACTIVE MONITORING
FULLY ENGAGED INSTALLATION DETECTION
COMPLIANT TO NFPA 2001, SEC. 4.3.4.1
15 YEAR LIFE SPAN
FLEXIBLE PACKAGING
AND MORE...



CALL OUR TEAM:
262-372-2165

ON THE WEB:
www.tlxtech.com

fireray[®]
The world's most trusted beam



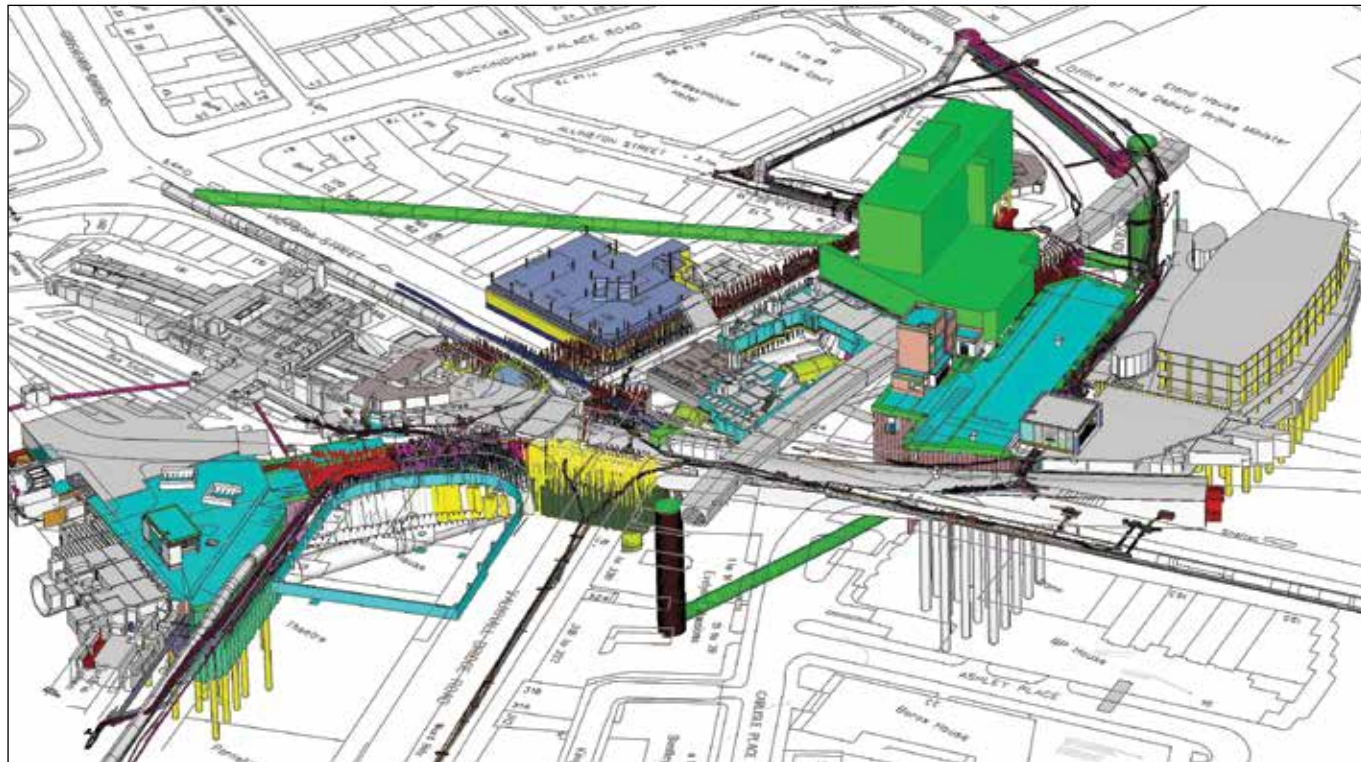
Optical Beam Smoke Detectors

Talk to the Experts whatever your Fire Risk

- Most comprehensive range of beam detectors and accessories to encompass all applications
- Complete alignment, control and maintenance from ground level
- Up to 1,800 square metre protection per beam detector set
- Field proven technology significantly reduces the potential for false alarm

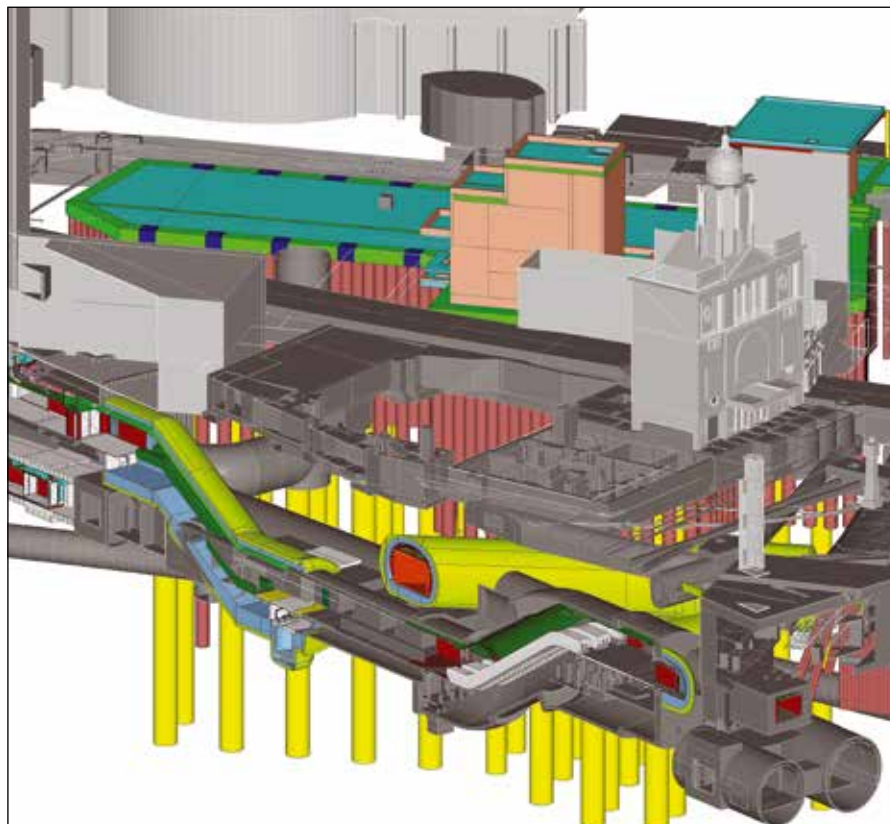


T +44 (0) 1462 444 740
E sales@ffeuk.com
W www.ffeuk.com



▲ In urban locations such as Victoria in London, the built environment can be as dense below ground as above.

▼ Building information modelling (BIM) integrates 3D models with dynamic datasets, enabling sophisticated analysis of underground stations' design and operation.



Unfortunately, many of the world's underground rail stations were built in centuries past, before fire engineering was a mature discipline. A prime example of this is the London Tube system, an extensive underground network of stations built as early as the 1860s, situated in a dense urban location alongside other extensive underground infrastructure.

Making existing stations such as these fire-resilient through retrofit is where the truly tough challenges lie. Fire engineers must grapple with unaccommodating station geometry, and avoid clashes with surrounding buried utilities. This can complicate matters where it becomes impossible for new ventilation ducts, evacuation staircases or fire brigade access routes to take direct routes to the surface. The effects of any necessary bends and turns must be taken into account. For example, evacuation is quicker along a straight route than one with a 'dog leg' corner.

An archetypal example is the Victoria Station Upgrade (VSU) project in London, for which Mott MacDonald is lead consultant from the detailed design stage through to construction. This major interchange Tube station, used by over 80 million passengers each year, is gaining dedicated fire brigade access provisions for the first time. Measures such as fire doors and fire-protected passenger corridors will make the station more resilient than ever before.

Managing Construction Risks

In order to avoid passenger service interruption as far as possible, upgrades to existing underground stations are typically delivered as phased projects, where discrete sections of the station are closed, upgraded and reopened in sequence,

allowing normal services to continue to some extent. However, this way of working creates fire protection risks of its own, as the station footprint is altered with each phase, meaning evacuation procedures and routes may be interrupted.

A fire strategy must be developed for each phase of construction, and impact assessments carried out accordingly. Thorough training ensures staff are fully conversant with the evacuation arrangements for each construction phase. All materials brought in for construction works – including signage and hoardings as well as general construction materials – must be assessed for flammability, toxicity and smoke production, and managed accordingly. Indeed, in 1984 a fire at Oxford Circus in London began in a materials store used by construction workers during works on the underground station.

If construction works impede an existing evacuation route from an underground station, creating a new temporary route is no simple undertaking. Other existing evacuation routes can be widened – as was done for VSU – or other temporary measures such as compartmentalisation doors can be installed to provide a longer window of opportunity for safe evacuation. Ultimately, no upgrade works should be allowed to raise the station's overall risk profile.

International Perspectives

Underground rail development is booming worldwide, and fire protection is a priority everywhere. The UK is not the only country to have learned hard lessons from historic underground rail disasters.

For example, in Austria the 2000 Kaprun funicular rail fire killed 155 people after a fan heater failed and caused a train fire within a tunnel. Damage to plastic pipes meant the hydraulically operated train doors could not be opened to release passengers, and damage to a power cable caused a blackout and cut off all communications. In South Korea, the 2003 Daegu subway fire engulfed two trains, killing 198 people. Combustible

► Crucial lessons have been learned since the 1987 King's Cross Tube station fire – including improvements to the design and maintenance of escalators.

materials within the trains exacerbated the fire's spread, a lack of emergency lighting prevented evacuation, no fire extinguishers or sprinklers were available, and passengers were unable to escape a burning train because the power to the doors was cut off.

Today, a myriad of international standards exist for fire protection of underground stations. Different countries may use varying terminology and require approval from differing stakeholders, but the fundamental principles of fire engineering in an underground rail context are generally consistent.

Mott MacDonald provides fire engineering services worldwide for both railway infrastructure and rolling stock in countries including Qatar, Norway and New Zealand. In some cases, multiple standards must be knitted together – such as in Norway's Bergen Light Rail project, for which we are providing detailed design, preparation of procurement documentation and stakeholder management. The scheme involves an underground station beneath an airport, meaning the design must satisfy both rail and aviation standards. In other cases, the local climate poses unique challenges. For example, in Middle Eastern countries the ambient temperature can climb upwards of 50 degrees C, demanding special consideration of how to cool underground stations in the event of a fire, and consideration of protections required by passengers once evacuated.

Holistic Tools

Technological developments are adding significant sophistication to the process of fire engineering on underground stations. Building information modelling (BIM) integrates 3D models with dynamic datasets, giving unprecedented insight into how a fire incident will unfold in a station. For example, a 3D model allows for evaluation of signage, lighting and evacuation routes from a passenger's-eye-view, and stakeholders such as fire brigades can better evaluate designs by seeing them in 3D.

Mott MacDonald uses BIM in conjunction with advanced modelling tools to analyse aspects such as ventilation and smoke extraction. We also use our in-house pedestrian modelling software, STEPS, to model evacuation procedures. The dynamic nature of BIM means design adjustments can be easily made, and their effects quickly evaluated, to optimise designs. Compared to traditional design practices based on 2D drawings, BIM brings opportunities to fine tune the way underground stations are engineered for fire safety.

In decades past, enormous human costs and business disruption have resulted from underground rail fires. With these new tools available to us, we are able to engineer fire safety solutions for underground stations in a more holistic, cost-effective and sustainable way, delivering safer underground stations than ever before.

► For further information, go to www.mottmac.com



GLOBAL FIRESTOP SOLUTIONS

FOR AN EVOLVING WORLD

STI OFFICES:

North America • Latin America • Europe
Middle East • China • South East Asia • India



An ISO9001 Company



Celebrating 25 Years of Firestop Excellence

OTHER NOTABLE PROJECTS

- Stanford University Medical Center – USA
- Mayo Clinic – USA
- Hôpitaux Universitaires de Genève
- Al Dar Headquarters Abu Dhabi
- Rolex – Switzerland
- Pentagon – USA
- Charles de Gaulle Airport – Paris
- Singtel Datacenter – Singapore
- Substations – Qatar
- AL Ain University – UAE
- Harvard University – USA
- Princeton University – USA

THE MOST UL® Firestop Systems

STI - 1,300+

At STI, we are committed to delivering the most comprehensive line of innovative and reliable firestop solutions across a broad range of segments and industries worldwide. With best-in-class service and support, we are the preferred choice of specialists. Contact us today to experience the STI difference.

www.stifirestop.com

TOP OF WALL - SPEEDFLEX® & FIRESTOP SPRAY



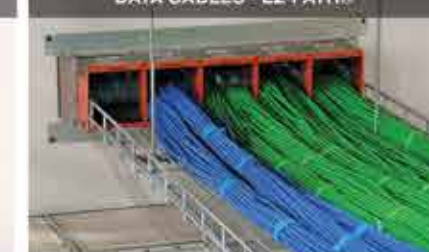
CABLE TRAY - FIRESTOP MORTAR & PILLOWS



PLASTIC PIPE - FIRESTOP SEALANT



DATA CABLES - EZ-PATH®



EZ-PATH® & SPEEDFLEX® are registered trademarks of Specified Technologies Inc.

KAUST - JEDDAH, KSA
INSPIRING A NEW AGE OF SCIENTIFIC ACHIEVEMENT



CLEVELAND CLINIC, USA
A TOP MEDICAL CENTER IN THE WORLD



CERN - SWITZERLAND
WORLD'S LARGEST PARTICLE PHYSICS LABORATORY



Expect
MORE
from your
fire suppression

MORE
SAVINGS

MORE
DESIGN FLEXIBILITY

MORE
CAPABILITY

E4 total flooding systems are tested and approved by UL (Underwriters Laboratory).



LEARN MORE AT: www.firetrace.com/more

FIRETRACE INTERNATIONAL - WORLD HEADQUARTERS

8435 N. 90th St., Suite 2, Scottsdale, AZ 85258, USA.
Tel: +1 480 607 1218 • Email: info@firetrace.com

FIRETRACE INTERNATIONAL LTD - EMEA OFFICE

Unit 11, IO Centre, Salbrook Road, Salfords, Surrey, RH1 5DY, UK.
Tel: +44 (0) 1293 780 390 • Email: info@firetrace.com

Business Continuity and the Need to Protect Data

In the modern world data is at the heart of commerce with very few businesses which are not in some way reliant on data. There are an estimated 30 million servers worldwide processing ever increasing quantities of video, voice and data through a global network of several billion devices.



Emelie Andrén Meiton

It is therefore not surprising that business continuity and disaster recovery plans often originate from a corporate data center position since an incident here has such far-reaching consequences. Central to this is the provision of effective safety and security, including the protection of data from the threat of fire.

One of the most likely causes of a catastrophic failure is fire yet its threat is often underestimated. Housing as they do such sensitive, vital information and systems essential to the survival of their clients, data centers present a greater need for absolute protection whilst paradoxically demonstrating an enhanced level of fire risk. The electrical power and extensive cabling that drive the computing systems provide a constant source of potential ignition, particularly under the raised floors, while the many thousands of plastic components supply a plentiful source of combustible materials. Given that an estimated 80 percent of fires are caused by electrical faults, the role of effective, intelligent and safe distribution of power is itself a vital consideration in safety terms.

Cooling requirements impact on fire safety

Both preventive and active fire protection is therefore particularly relevant in such vulnerable locations. The newer high-performance equipment, such as multi-processor servers and high-speed communications switches are raising rack densities well above 30 kW (equivalent to the drive output of an electric car). In ever more densely packed layouts, today's servers necessitate air-cooling up to 8600watts/m2. To help put this into context, on a cloudless day in mid-Europe, the sun will typically generate 700watts per square meter. The equivalent of a cooling power of 8400watts/m2 would therefore be like lowering the temperature from 12 suns burning down on one square meter. The resulting higher air exchange from cooling will partly remove any smoke with the airflow, making early detection by traditional systems even

▼ Effective fire safety systems are a fundamental requirement in achieving maximum system uptime and availability.



Emelie Andrén Meiton is Product Line Manager at Siemens Building Technologies.



▲ The seamless interaction between fire detection and extinguishing is a basic requirement for ensuring effective fire safety and minimum downtime. Aspirating smoke detection (ASD) from Siemens will provide the earliest possible warning even when the smoke is barely discernible to people.

more difficult, as well as increasing the risk of the fast spread of fire to other areas. Even a smouldering fire without flames can damage hardware through sooting, corrosion and toxic gases. The time between the initial outbreak of fire and its successful extinguishing after detection, is the critical factor when attempting to prevent operational failure of a data center.

The earliest possible warning

Given the susceptibility of data centers to the threat of fire, even in its early incipient stages, detecting it at the earliest possible point is the objective. It is generally accepted that aspirating smoke detection (ASD) is one of the technologies which provides the earliest detection of the incipient stages of combustion. ASD is therefore very widely used to protect IT and telecommunications facilities – the applications for which it was originally developed – protecting the highly ventilated atmosphere which typifies the data center environment.

Aspirating smoke detection systems can detect smoke before it is even visible to the human eye. The systems generally consist of a network of independent pipes with one or more sampling apertures that actively draw air into a highly sensitive smoke-sensing chamber. There, the sampled air is precisely and accurately analyzed by a scattered-light detector for smoke particles. If smoke particles beyond a preset threshold are detected, the system triggers an immediate alarm. In that way,

a timely warning is given – along with the opportunity to fully investigate the cause of the alarm. The most appropriate response can then be initiated to stop the fire gaining a hold and thus prevent injury, damage and disruption to business.

Aspirating systems can be up to a thousand times more sensitive than a standard point detection system. By combining this level of sensitivity with an environmental learning capability, it is possible for such a system to provide and maintain the optimum operating level and keep unwanted or ‘false’ alarms to an absolute minimum – without external input. Aspirating systems also usually have the capability to monitor their own integrity and, in the event of the system’s ability to detect smoke being compromised for any reason, an alert is raised.

Intervention and extinguishing

Shutting down equipment at the earliest indication of fire will stop even corrosive combustion gases developing further. However, in order to prevent false alarms, standards still often require two separate detectors to sound an alarm before the extinguishing system is activated – a single detector causes the system to go into a state of pre-alarm, and only if the alarm is reconfirmed the extinguishing agent will be released. Thanks to modern technology though and to the high detection reliability of today’s point type detectors and ASD, false alarms can be excluded, even when using just one detector, without an alarm verification system.

The method of delivering the extinguishing agent and selecting the correct agent for the given application is a very important factor in optimizing protection. In critical applications, a dry extinguishing system is essential because

of the sensitivity of the IT infrastructure. Water is generally not used as an extinguishing agent in data centers, the only exception being in generator rooms in which combined gas/water solutions are used because of the thermal risk. Two types of gas extinguishing systems are especially suited to data centers: chemical extinguishing agent systems and inert gas systems. The latter tend to be employed in medium to large-sized data centers while chemical agents are used in small to medium-sized data centers.

Since the server rooms are the *raison d’être* of a data center, special solutions have to be employed even on the hardware side of extinguishing: recent studies have shown that the noise of conventional gas extinguishing systems could affect the performance of the hard disk drives. That is why today silent extinguishing systems with purpose-built silent nozzles are the solutions of choice for data center extinguishing, with both natural gas and chemical agents.

In other critical applications such as generator rooms, uninterrupted power supply (UPS) systems ensure continuity in case of power cuts. As alluded to above, in such situations extinguishing agents are available which combine nitrogen and water – the excellent extinguishing characteristics of nitrogen with the addition of water mist to cool down hot surfaces, thereby putting out the fire faster and avoiding re-ignition.

The seamless interaction between fire detection and extinguishing is a basic requirement for ensuring effective fire safety and minimum downtime. Analyses by leading independent testing institutions in fire protection and security worldwide consistently highlight that the prime cause for fire safety system failure is the interface between detection, alarming, control and extinguishing. Early, reliable

SIEMENS



Find out more on how to protect your data from fire.



Server down = 100% chaos

Keep your data center up and running with our state-of-the-art fire safety portfolio

Servers are at the heart of most enterprises. They are the foundation of the computer infrastructure and contain all operational information and technology. A data center downtime can mean losing thousands of dollars – per minute. It can also negatively impact a company’s image and reputation. Did you know that about six percent of infrastructure failures in data centers are related to fire?*

When a fire in a data center occurs, business-critical assets and irreplaceable data are at stake. Seconds count, so earliest fire detection and reliable extinguishing are key. We offer you a compelling integrated fire safety concept based on environmentally sustainable, best-in-class technologies and innovative, reliable products. It will help you protect people and ensure your business continuity. Our unique Sinorix™ Silent Extinguishing Technology, for example, was specifically developed to prevent damage to hard disc drives during the extinguishing process. Rely on intelligent fire safety solutions – and put your business in safe hands.

*Source: Data Center Journal, July 2007

www.siemens.com/firesafety-datacenter



◀ Safe Host, a Swiss data center, uses a Sinorix gas extinguishing system.

center was driven by demand – the facility being equipped floor by floor with the latest technology, as and when required. For this reason, Safe Host's building now contains different generations of fire detection and extinguishing equipment. Some floors use detectors and control panels from Siemens older AlgoRex line, while most are equipped with devices from Siemens' current Sinteso family. All security devices are managed using a central Siemens' management station that collects information from more than 2,800 data points and visualizes them on 60 graphical displays of all the floors.

The Safe Host building is today divided into 350 fire detection zones and uses no fewer than 830 highly sensitive fire detectors from Siemens' Sinteso and AlgoRex families. They are supported by approximately 30 aspirating smoke detectors (ASDs) that continuously analyze air in the rooms for smoke particles. All detectors throughout the Safe Host building are connected to four fire control panels, supplemented by floor repeater displays. Some 50 manual call points are also installed at strategic locations and in an emergency, 65 alarm sounders ensure that the building is evacuated effectively.

As already stated, solutions using water or water mist are not recommended in data center applications. The moisture could potentially cause more damage to the servers' sensitive electronics than the fire itself. For this reason, Safe Host uses a Sinorix gas extinguishing system. If the fire detectors confirm a fire, the system automatically triggers the extinguishing process. Valves on the gas cylinders in the basement of the building are opened and nitrogen, as an inert natural gas, flows through a network of pipes to wherever it is needed. There, the nitrogen displaces oxygen, depriving the fire of one of its essential components. Once the oxygen level is reduced from 20.9% to under 14% any fire is extinguished and re-ignition is impossible. This all happens in a matter of seconds and it is an effective way to extinguish both open and smoldering fires. Nitrogen also poses zero risks to human health or well-being.

➔ For further information, go to www.twitter.com/siemens_press

detection of a fire and the initiation of appropriate extinguishing measures are critical factors in an effective protection concept. Fire detection, evacuation and extinguishing systems must therefore be fully compatible with each other. Systems with real interoperability from a single source are therefore the preferable option in such a mission critical environment as a data center, requiring a partner with competence not only in the detection and extinguishing technologies but in the interoperability processes themselves.

Integrated solutions

Electronic security and safety solutions can help protect a data center and in doing so protect an organization's application availability, its confidentiality, its integrity and, ultimately, its ability to function. Integration of security and safety measures is one of the prime methods of enhancing business continuity through protection of business-critical data. Central management of operational systems provides a more efficient and dynamic use of resources, focusing them when and where they are needed. Fire safety and security can be integrated through danger management stations. This allows for centralized supervision and alarm handling from a number of different sources, including fire detection, video surveillance, access control and intrusion detection.

The benefits of integrating fire safety and security are numerous: video surveillance allows the danger zone to be viewed immediately, offering a visual means of verifying and assessing the situation; integrated access control provides monitoring of escape routes

and the means to quickly open or close doors, an important part of the evacuation process; integrated intrusion detection means that data and electronic equipment are protected not only from the threat of fire but also against unobserved theft or sabotage. All of this through a single, centralized station which guides personnel through the step-by-step processes to be followed in the event of an incident. This integrated view of what is happening not only helps to resolve an incident but also provides the capability to learn from incidents which is crucial in enabling process adaptation in the very dynamic risk landscapes which characterize today's business environments. Although safety and security are not a direct part of IT operations, they definitely help to ensure the business continuity environment of a data center.

Also building automation and control systems can be integrated to enable control of heating, ventilation, air conditioning, lighting and blinds to optimize energy efficiency – a vital consideration when growth in data center infrastructure requirements suggests power needs may necessitate the construction of 10 to 15 new power plants over the next decade in each high density region.

Safe Host

An example of how an integrated approach to safety and security can optimize protection is illustrated by Safe Host, a Swiss data center comprising a six story building, five of which are occupied by approximately 12,000 servers and storage devices containing the data of more than 140 customers. The expansion of the data

THE BEST KEPT SECRET IN FIRE SUPPRESSION



Solberg is an Amerex Corporation company with a European heritage. Growing steadily over the past thirty years, today Solberg is revolutionizing fire protection and the firefighting industry with the first real advances in foam technology in "50" years.

Scan the QR code to download the free Layar app. Once installed, scan the ad with the app to view the video about Solberg, the global leader in foam fire technology.

For more information visit: rehealingfoam.com



THE SOLBERG COMPANY
1520 Brookfield Avenue
Green Bay, WI 54313
USA
Tel: +1 920 593 9445

SOLBERG SCANDINAVIAN AS
Radøyvegen 721 - Ølsvollstranda
N-5938 Sæbøvågen
Norway
Tel: +47 56 34 97 00

SOLBERG ASIA PACIFIC PTY LTD
3 Charles Street
St. Marys NSW 2760
Australia
Tel: +61 2 9673 5300

Planning for Evacuating People with Disability

Planning for evacuation of people with disability is a complex issue. This article is an extract of the recently produced guidebook entitled *Evacuation of People with Disability and Emergent Limitations: Considerations for Safer Buildings and Efficient Evacuations*, which discusses the requirements for people with disability during building emergencies.



Lee Wilson

Lee Wilson is a disability access and egress consultant.

A gap exists in many countries' legislative framework relating to the evacuation of people with disability under disability discrimination, building and workplace safety laws. This gap exposes those members of the community with disability, particularly those with sensory or mobility disabilities, to the risk of being delayed in their ability to evacuate a building or being entrapped within a building.

In 1997 the Australian Building Codes Board (ABCB) acknowledged this gap and recognised the need to improve the provisions for access and emergency egress for people with disability. The ABCB published RD 97/01, Provisions for People with Disabilities, a Regulatory Document which proposed an amendment to the Building Code of Australia (the 'BCA'). The proposed amendments included radical changes to the access and egress provisions, including the requirement for accessible exits or places of safe refuge, or a combination of the two. Most of the access provisions proposed at that time were subsequently introduced into Volume 1 of the 2011 edition of the BCA, part of the National Construction Code. The access provisions have generally remained unchanged in subsequent editions of the BCA.

The ABCB Regulation Document RD 97/01 included recommendations for egress provisions relating to places of safe refuge and enhanced notification systems. Contrary to the access provisions adopted in BCA 2011, the proposed emergency egress provisions detailed within RD 97/01 had not been addressed until the 2013 edition of the BCA introduced very limited exit provisions to assist people with disability.

Research commissioned by the ABCB in 2005 discussing the challenges of a vertical evacuation path highlighted that any new provisions to be introduced into the BCA would be "very complex considering the numerous building, system and configuration scenario". For these reasons, it is understood that the ABCB has adopted a strategy to stage the introduction of enhanced egress provisions into the BCA.

The current Australian regulatory environment equates to new and refurbished buildings being inclusive and accessible, with little consideration as to how to get everybody out during an emergency. It is my belief that there remains a substantial gap within the legal framework that is ultimately exposing building occupants to an undue risk. This is due to a failure to fully consider everyone's needs, particularly those people facing a vertical evacuation path within a multi-storey building.

The Need for Enhanced Provisions

In 2009 the Australian Bureau of Statistics (ABS) reported that there were four million Australians or 18.5 percent of the population with a disability. The following statistics released by the Australian Network on Disability provides an insight into Australian workplaces:

- 2.1 million 15 to 64 year olds have a disability.
- 3.4 million have a physical disability.
- 1 in 6 is affected by hearing loss.
- Over 700,000 have an intellectual impairment and 90,000 people have a mental health disorder.

- Vision Australia has estimated there are 357,000 who are blind or have low vision.
- 10% of the population has dyslexia, whilst almost 90% of disabilities are not visible.

Worldwide, people with disability have increasingly moved into the mainstream and deserve to be afforded the same level of safety as they go about day to day activities. After all, there are statutory obligations that require employers, building or facility management, building contractors and building designers to contribute to a workplace that is "without risks to the health and safety of any person".

Australian Legal Framework

In Australia there is no one specific piece of legislation that mandates all evacuation provisions for people with disability; similar legislative structures are in place throughout other developed countries. The current legislative framework in Australia pertaining to evacuation procedures includes:

- Disability Discrimination Act 1992 (DDA).
- Commonwealth Work Health and Safety Act 2011 (and/or applicable state based laws).
- National Construction Code, incorporating the BCA Volume 1 and Volume 2 (adopted into each State or Territory's building laws).

Disability Discrimination

The objectives of the DDA are to:

- Eliminate, as far as possible, discrimination on the grounds of disability in areas of work, accommodation, education, access to premises, clubs and sport, the provision of goods, facilities, services and land, existing laws and administration of Commonwealth laws and programs.
- Ensure, as far as practicable, that people with disability have the same rights to equality before the law as the rest of the community.
- Promote recognition and acceptance within the community of the principle that people with disability have the same fundamental rights as the rest of the community.
- Specifically, Section 23 makes it unlawful to discriminate when providing access to or the use of premises.

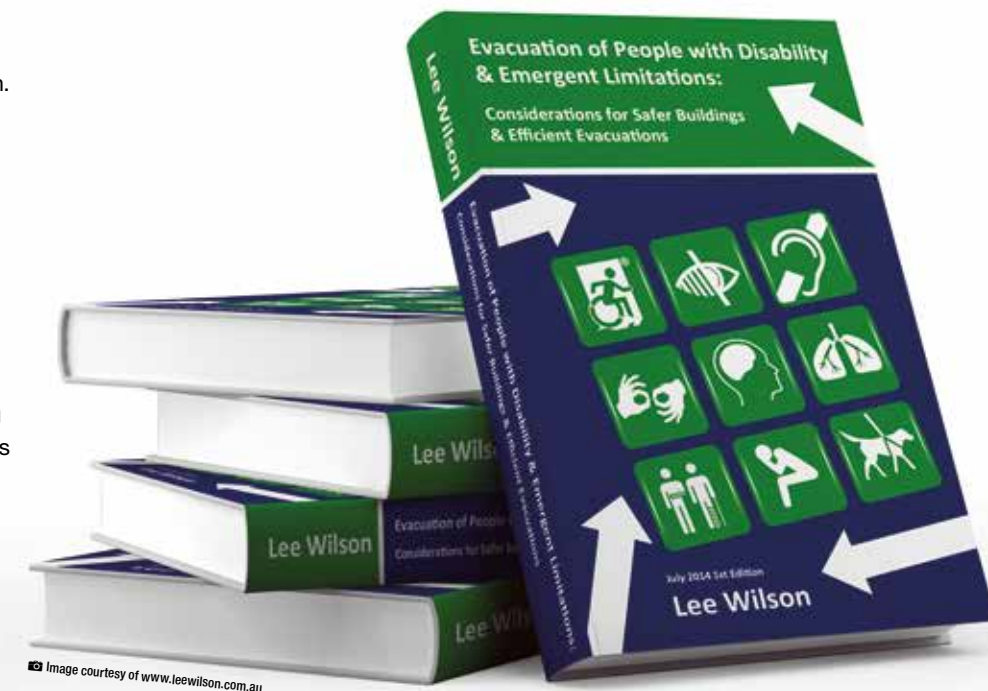


Image courtesy of www.leewilson.com.au

The DDA is a complaints-based document, which requires people to make complaints against a property owner or occupier for any changes to occur. The difficulty with administering a complaints-based system is that previously there were no prescriptive requirements detailing how to achieve compliance.

In 2000 the DDA was amended and allowed the Attorney General's Office to develop Disability Standards for premises, similar to those in place for education and public transport. The ratification of the Disability (Access to Premises – Buildings) Standards 2010 (the 'Premises Standards') occurred on 1 May 2011, which sits under the DDA. The Standards introduced progressive changes to provide greater accessibility into buildings and were essentially replicated in BCA 2011. However, provisions for the emergency egress were omitted from the Standard. Likewise, the Disability Standards for Accessible Public Transport, which details the access and mobility requirements for public transport facilities, also provides no consideration for emergency egress of people with disability.

Occupational Health & Safety

Occupational health & safety laws provide rights for safe occupation while working in a building or facility. The Commonwealth Work Health and Safety Act 2011 mandates that employers are required to ensure as far as is reasonably practicable that the workplace and the means of entering and leaving are safe and without

risks to health. Additionally, it requires that buildings are designed to be safe and without risks, which arguably includes the ability for safe evacuation.

The need for safe evacuation for people with disability was recognised in the recent update of Australian Standard 3745-2010 Planning for Emergencies in the Workplace. AS3745-2010 states that the evacuation arrangements for people with disability must be considered in the development of the emergency response procedures and that when developing these procedures, consideration must be given to "occupants and visitors who for one reason or another may need assistance or are unlikely to be able to act optimally in an emergency".

The Standard also recommends suitable strategies should be discussed with people with disability occupying a building, including developing a Personal Emergency Evacuation Plan (PEEP) for each person, with consideration to the use of stairway evacuation devices. Additionally, a list of names, workplaces and other relevant information should be kept in the Chief Warden's control area.

National Construction Code

The National Construction Code (NCC) "is an initiative of the Council of Australian Governments (COAG) developed to incorporate all on-site construction requirements into a single code". The NCC comprises Volume 1 & 2 of the Building Code of Australia (BCA) and the Plumbing Code of Australia. The BCA is published by the ABCB and has been updated and



Image Copyright © Egress Group Pty Ltd 2015

published since 1996 and is adopted by reference into each State or Territories' building legislation. The objectives of the BCA are to "Enable the achievement of nationally consistent, minimum standards of relevant, health, safety (including structural safety and safety from fire), amenity and sustainability objectives efficiently".

The BCA fails to consider all provisions for safe evacuation for persons with a disability. This need was identified in The Parliament of the Commonwealth of Australia 2009 paper 'Report of the Inquiry into Draft Disability (Access to Premises – Buildings) Standards', which made a number of recommendations prior to ratifying the Draft Standards.

One such recommendation stated "The Committee recommends that the Australian Building Codes Board undertake further research to identify deemed-to-satisfy provisions for emergency egress for people with a disability with a view to making changes to the Building Code as soon as possible". To date this recommendation has not been fully addressed and the following is a summary of the minimal provisions introduced into BCA 2013:

- Accessible door handles on required exit doors.
- Braille and tactile signage indicating the level of the building below all required exit signs.
- Exit doors are no longer permitted to have a step within the threshold and require a threshold ramp or step ramp when leading to an open space or road.
- One compliant accessible handrail provided to all stairways or ramps within a required exit pathway.

The recent 2014 update of the BCA included no additional provisions for safe disability egress, other than some general requirements for non-slip surfaces on ramps and stairs.

As part of the staged implementation of 'Deemed-to-Satisfy' provisions adopted by the ABCB, the following had been proposed for BCA 2015:

- Enhancing existing audible emergency alarm systems with visual warning in accessible areas.
- More intuitive building design to assist people that are blind or have low vision locate an exit.
- Improving the accessibility of exits for people with mobility impairments.

Unfortunately, the draft BCA 2015 released for public comment included no changes to egress provisions. However a September 2014 ABCB Regulation Impact Statement, currently open for comment at the time of writing, raises concepts for comment and suggests two options to fill this gap. The first is a non-regulatory handbook, similar to the evacuation lift handbook the ABCB released in 2013; the second is to amend the BCA to include five changes:

- 1 Visual alarms.
- 2 Tactile alarms.
- 3 Co-location of fire-isolated exit with lifts.
- 4 Accessible egress paths to and from an exit.
- 5 Accessibility of fire-isolated exits

With the recent announcement of the BCA moving to three-yearly editions commencing after BCA 2016 it is critical

that the ABCB implements improvements to the egress provisions of BCA 2016 prior to the first three-year cycle, otherwise it will be 2019 before an opportunity presents again for further amendments (and some 22 years after the ABCB published RD 97/01).

Closing the Gap

The proportion of the Australian population over 65 will increase from 14 percent in 2011 to 25 percent in 2100 and we need to work to future proof our buildings for the coming 'grey workforce' with people working longer and living longer. In the future there will likely be a higher prevalence of people with disability in the workplace, with higher rates of diminished sight, hearing and other senses. Furthermore, current lifestyle trends in society are creating an obesity epidemic, where the ABS has reported that the number of adults classified as obese or overweight has increased from 56 percent in 1995 to 61 percent in 2007-08 and in 2008, over one-third of adults over 20 years of age were overweight.

More consideration for people with disability must be made across all sectors. Undoubtedly there must be a more holistic approach taken by government regulators, managers of workplaces and facility managers and we need to develop strategies to improve social and attitudinal factors in terms of an inclusive approach to accessible means of egress. This approach must consider workplace management controls, the human behavioural aspects and the physical attributes of a building including consideration for the use of areas of refuge, evacuation devices (such as evacuation chairs) and evacuation lifts.

The practical and equitable provision of safe egress for all building occupants has been a complex issue to resolve, with a general lack of awareness, understanding and a failure to provide a holistic approach from all parties. In fact, the issue of discussing emergency egress within workplaces was described in 1993 as "opening the proverbial can of worms", where employees with disabilities would rather keep quiet than cause any trouble or risk their own employment opportunities. This remains an unacceptable situation and needs more consideration with formulated action.

 For further information, go to www.leewilson.com.au

No secret for AFFF producers...

dynaxC6 ... yield EMB AFFFs with:

- Highest Performance (MIL-F)
- Lowest Aquatic Toxicity
- No Bioaccumulation



or



Environmentally Most Benign AFFFs, designed for 3% MIL-F and 3% ICAO B+C based on Dynax's C6 Fluorosurfactants (≥99% C6 / ≤1% C4), passed fire tests at UL (United States) and SP (Sweden).

DYNAX CORPORATION

PO Box 285, Pound Ridge, NY 10576 USA

T 914 764 0202 techinfo@dynaxcorp.com

F 914 764 0553 www.dynaxcorp.com

dynax
FLUOROCHEMICALS

Barriers to trade?

Chuck Lewis of Coopers Fire Ltd explains the legal implications of the Construction Products Regulation for manufacturers and suppliers of smoke barriers.



Chuck Lewis

The full introduction of the Construction Products Regulation on 1 July 2013 resulted in significant changes to the rules that apply to the supply of construction products into the European Union / European Economic Area market.

The CE marking of such products was previously mandatory in certain nations under the Construction Products Directive – now repealed – but was only voluntary in the UK. The CPR (305/2011) makes it a legal requirement to CE mark any construction product which is covered by a harmonised European Standard (hEN). For other products covered by European Assessment Documents and for which European Technical Assessments (ETA) are produced, CE marking remains optional, although if an ETA is produced, the product must be CE marked. Since smoke barriers and their power supplies are covered by harmonised European Standards, these products must now be CE marked if they are to be placed for sale in the European marketplace.

The CPR introduced a range of additional requirements placing responsibility not only on manufacturers to CE mark their products, but also on importers and distributors to ensure that any products they supply are compliant.

Why CE mark?

The CPR aims to prevent products entering the supply chain that do not meet a minimum standard threshold, set by product standards. These ensure a consistency of good design and manufacturing processes, and ensure manufacturers meet technical and legal requirements. Standards provide a reliable basis for users to share the same expectations about products.

Under the CPR, the intended end use of a product often has a significant impact on the route to compliance and on who takes responsibility for what. This is because each harmonised standard

details an Assessment and Verification of Constancy of Performance (AVCP) level, which dictates the procedure that must be followed for CE marking.

There are five levels of AVCP, ranging from Levels 1 and 1+ (the most onerous, which require the involvement of a Notified Certification Body) to Level 4, which requires only the manufacturer's involvement. Safety critical products are generally allocated an AVCP of 1+ or 1.

What are barriers?

Smoke and heat exhaust ventilation systems (SHEVS) create a smoke free layer above the floor by removing smoke and heat and improve the conditions for safe escape. This assists the evacuation of people from buildings, reducing fire damage and financial loss by preventing smoke logging, facilitating fire-fighting, reducing roof temperatures and retarding the lateral spread of fire.

Smoke barriers used within a smoke and heat control system are a critical element of that system. When smoke barriers deploy from the ceiling they are intended to control the movement of the hot buoyant smoke within buildings in the event of fire. Smoke barriers in their fire operational position will provide essential smoke containment and channelling of the smoke for extraction from the building.

It is due to this safety critical role that smoke barriers are rated by the EU Commission as System 1 type products, which places additional requirements on manufacturers wishing to obtain a CE mark.

The requirements

Smoke barriers and power supplies are legally required to be CE marked in accordance with the Construction Products Regulation and therefore are required to be compliant to standards ensuring their safety and reliability.

To obtain a CE mark, smoke barriers must be manufactured and supplied to



Images courtesy of Coopers Fire Limited

meet the minimum safety thresholds set by the harmonised standard EN 12101-1:2005+A1:2006: Smoke and heat control systems. Specification for smoke barriers. This standard was harmonised in September 2009, after the withdrawal of the only national standard BS 7346-3:1990.

For power supplies, the harmonised standard is EN 12101-10:2005: Smoke and heat control systems. Power supplies, which was harmonised in May 2012.

EN 12101-1 sets out the requirements for active smoke barriers, detailing tests which will ensure their continued reliability and demonstrate that they will operate in a controlled manner. Active smoke barriers must demonstrate their ability to fail-safe, a level of fire-resistance and have measurable air permeability, with limits dependent on their category for end-use. Static smoke barriers must demonstrate a level of fire-resistance and have measurable air permeability only. Meanwhile, EN 12101-10 requires that

power supplies are tested for a range of temperatures and humidity levels dependent upon on their category for end use.

Under the CPR, manufacturers are required to supply a Declaration of Performance (DoP) and, since such products are rated as System 1 type products, they must also supply an Assessment and Verification of Constancy of Performance (AVCP) and a Certificate of Constancy of Performance issued by a Notified Certification Body.

The manufacturer must demonstrate they have Factory Production Control (FPC) and further testing of samples taken at the factory is required. The Notified Certification Body will determine the product type on the basis of type testing (including sampling), type calculation, tabulated values or descriptive documentation of the product. The Notified Certification Body will also provide initial inspection of the manufacturing plant and of Factory Production Control (FPC) and continuous surveillance, assessment and evaluation.



Does this impact on costs?

The cost of producing correctly tested and CE marked products represents a significant investment for manufacturers. Those embracing change early well understand this process and therefore are able to amortise costs of testing and certification into their products, ensuring they meet the obligations under the CPR going forward.

5

Testing the Response of Smoke Detectors

The test fires that are used to assess ionisation and optical smoke detectors were developed in the 1980s, but the materials found in modern service environments have changed since then. There is now a greater use of plastics and flame retardant foams in modern buildings, but little information is available on the response of detectors to the smoke generated by the burning or smouldering of such materials.



Raman Chagger

A research project investigated the smoke profiles generated from the fire tests specified in the EN 54-7 (commercial) and EN 14604 (domestic) smoke detector standards, and compared them with those produced from burning or smouldering materials commonly found in modern service environments. The intention was to establish whether the current test fires are adequate for assessing smoke detector performance to a broad range of fires involving modern materials.

Ionisation and optical smoke detectors

Both ionisation and optical smoke detectors have been used in commercial and domestic environments for many decades. They use different methods to detect smoke and each is more attuned to detecting certain types of smoke particles.

Ionisation smoke detectors are typically more responsive to flaming fires in which many small smoke particles are generated due to the high energy of the fire. These small particles tend to strip ions in the detection chamber which leads to a quick response. Smouldering materials, however, tend to produce fewer but larger particles that are more difficult for ionisation detectors to detect.

Optical smoke detectors are typically more responsive to the smoke particles from smouldering fires as the larger particles they generate cause greater scattering in the optical chamber. Optical detectors can be less responsive to the small particles produced during flaming fires that cause less scattering.

It is worth mentioning here that ionisation smoke detectors installed near kitchen areas are prone to causing false alarms.

This is because the smoke generated during cooking and from toasters tends to comprise of smaller particles with high energy, which cause the ionisation detectors to respond. The greater use of optical smoke detectors near kitchens will lead to a reduction in false alarms from cooking fumes.

As both types of technology contain inherent strengths and weaknesses, this research project aimed to determine whether ionisation detectors perform poorly to smouldering fires and if optical detectors are less responsive to flaming fires.

The test fires used to assess smoke detectors

Both EN 54-7 and EN 14604 use the same methodology for identifying the most challenging conditions under which to test detectors. Four test fires are used to assess smoke detector performance – these are TF2: smouldering wood, TF3: smouldering cotton, TF4: flaming plastics and TF5: flaming n-heptane.

The average smoke profiles produced from the four test fires are shown in Figure 1. The y-axis (m) represents the optical density (measured in dB/m) and indicates the larger particles which are generated in greater quantities during smouldering fires. The x-axis (y) is a dimensionless quantity that reflects the amount of ionisation taking place and represents the number of smaller particles which are generated in greater quantities during flaming fires.

These four test fires produce a broad range of smoke types with different properties and are used to assess the smoke entry characteristics and sensitivity levels of smoke detectors. Materials such as plastics and flame retardant foams will generate smoke with different properties when

flaming and when smouldering – depending on the type of smouldering (e.g. near a radiant heat source or sustained contact with hot surface). It was not known whether the smoke from such fires was effectively covered by existing fire tests, and how ionisation and optical detectors respond to such smoke – especially beyond the limits of the existing four test fires.

Test Methodology

The equipment specified in the smoke detector standards (thermocouples near the floor and ceiling, obscuration meter and measuring ionisation chamber in the 3m arc) was used in an 11m long, 7m wide and 4m high EN 54-7 fire test room.

Twelve approved smoke detectors and smoke alarm devices from undisclosed manufacturers were used for the fire tests; eight of these were installed on the ceiling and four on an adjacent wall. The detectors comprised of eight domestic smoke alarm devices (four ionisations and four opticals) and four commercial smoke detectors (two ionisations and two opticals).

To define the end point of the tests, guidance was taken from the EN 54-7 and EN 14604 standards, which specify end of test limits for smouldering and flaming fires that are $m=2$ dB/m or $y=6$ respectively.

Test fires and detector responses

Twenty-nine test fires were conducted, including the four test fires specified in EN 54-7 and EN 14604. Of these eleven were smouldering fires, sixteen were flaming fires and two started off smouldering and went on to become flaming fires. The fuels used included unleaded petrol, medium density fibreboard (MDF), PVC cable, flame retardant polyurethane foam, sunflower oil, newspaper, polyester, nylon, ABS, polystyrene, polycarbonate and polyethylene.

All of the detectors were periodically replaced, as exposure to the smoke from a number of tests could cause contamination in the smoke chambers that could potentially affect their response. The growth rates of m, y and CO (for interest), along with the detector responses, are shown for two of the tests in Figures 2 and 3.

The data presented in Figure 2 demonstrates the rapid response of the ionisation detectors (both commercial and domestic) to the small particles generated during the MDF flaming fire test. The response from the optical detectors is slightly

Figure 1: The average m:y smoke profiles of the four test fires currently used

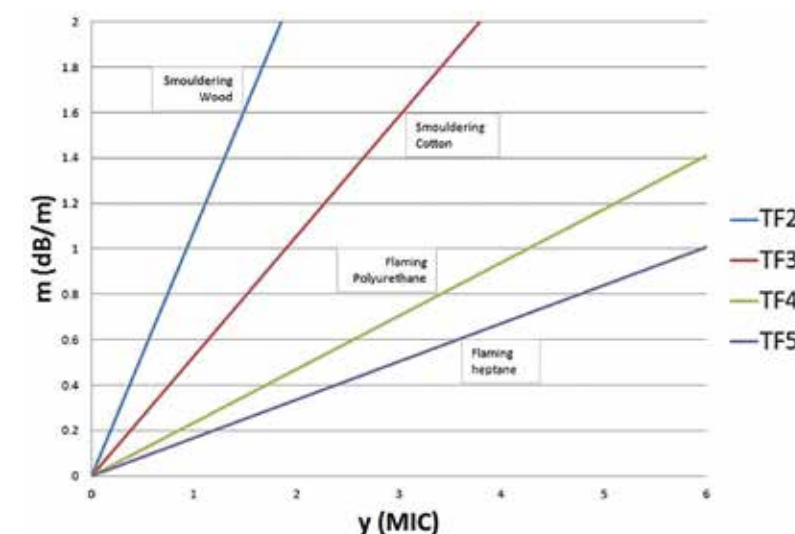


Figure 2: Response performances during the medium density fibreboard flaming fire test

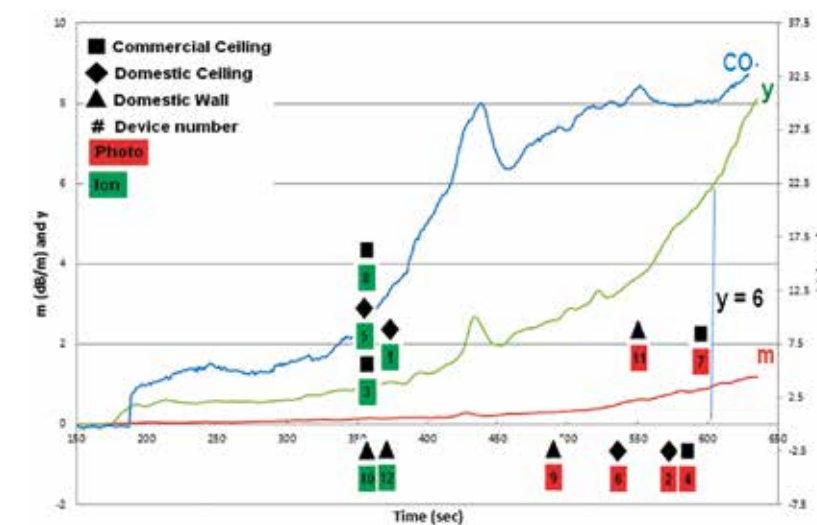


Figure 3: Response performances during the polystyrene fire test

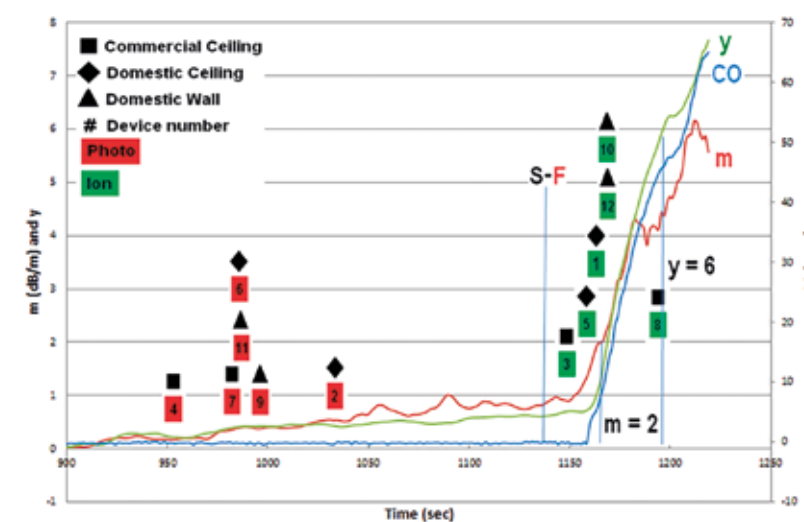




Figure 4: A smouldering test fire

delayed until the fire increases in size and the radiant heat leads to more smouldering particles being produced from the MDF. All detectors respond before the defined end of test for a flaming fire ($y=6$) is reached.

The test illustrated in Figure 3 demonstrates the difference in response between ionisation and optical detectors to a smouldering then flaming fire. At first the polystyrene fuel is smouldering due to the increasing temperature of the steel plate on which it rests. This leads to all 6 photoelectric detectors responding before the defined end of test for a smouldering fire ($m=2$ dB/m) is reached. When the temperature of the polystyrene reaches ignition point (shown as S-F in Figure 3) the fuel combusts. Within a few seconds the first ionisation detector responds and all ionisation detectors are in alarm before the defined end of test for a flaming fire ($y=6$) is reached.

Summary of the test fires and detector responses

Of the twenty-nine test fires conducted five produced too little smoke and were repeated with greater quantities of fuel.

Of the remaining twenty-four tests, sixteen fell within the m/y limits specified by the TF2-TF5 test fires from EN 54-7 and EN 14604. From these tests two negative responses were recorded with 190 positive responses. For the remaining eight tests, four had a high mean m/y ratio and four a low mean m/y ratio.

For the four tests with a high mean m/y ratio the detectors responded for all fires except for two domestic wall ionisation devices, which did not respond to a smouldering flame retardant polyurethane fire and two domestic ceiling optical devices that did not respond to a smouldering ABS fire.

For the four tests with a low mean m/y ratio the detectors responded for all fires except for five optical devices that did not



Figure 5: A flaming test fire

respond to a flaming fire using nylon as the fuel source. This is most likely due to the relatively small size of the fire, as the peak m and y values generated during this fire were significantly lower than those in the other fires. If enough smoke had been generated during this test fire, all twelve devices may have responded. However this result has not been qualified, so from the results of the remaining twenty-three fires there were six no responses and 270 responses. This represents positive responses 97.8% of the time. The six no responses are attributed to the inconsistent responses of one particular type of detector and suspected contamination for the remaining ones.

Even though no statistical data was gathered by repeating the same tests, the results do provide evidence of the response characteristics for the types of detectors (optical or ionisation) to a variety of smoke types produced from smouldering and flaming fires.

Summary of the smoke profiles generated

Of the twenty nine test fires, four smouldering fires were found to be beyond the (m/y) limits for a TF2 and four flaming fires were found to be beyond the (m/y) limits for a TF5. The m/y ratio for a flaming wooden crib fire was found to be the worst case of all the flaming fires. For the smouldering tests carried out beyond the TF2 limit the m/y ratio for the smouldering ABS fire was significantly higher than the others.

The test fires TF2-TF5 do cover most general purpose applications as a real fire is unlikely to involve only a single type of material. As more materials with different smoke characteristics are involved in the fire the likelihood of detection increases.

However, it should be noted that smouldering fires can continue for a long time with only one material being involved, potentially leading to the production of toxic

gases in fatal concentrations. An example is bedding in contact with a heat source such as a lit cigarette. In this case an ionisation detector may not respond and therefore should not be sited in locations where such a scenario is possible. In contrast a flaming fire in a building will eventually produce sufficient heat that will radiate onto other materials and lead to the production of smouldering smoke particles to which the optical detectors are expected to respond.

Conclusions and further work

The aim of this research was to measure the smoke characteristics of a number of test fires using modern materials, and assess them against the test fires specified in the EN 54-7 and EN 14604 standards.

The research demonstrated that commercial and domestic approved ionisation and optical smoke detectors respond to a broad range of fires with m/y ratios within and beyond the fire test limits of EN 54-7 and EN 14604. The fire tests specified in EN 54-7 and EN 14604 are considered to be appropriate and are sufficiently wide in terms of distribution of smoke characteristics. This demonstrates that the fire tests specified in these test standards are still applicable today and, despite the changes in the use of materials over the decades, approved smoke detectors have very wide smoke response capabilities.

Both ionisation and optical smoke detectors are attuned to detecting certain types of fires. In order to ensure that the most appropriate type of device is installed, guidance on the use of ionisation and optical smoke detectors should be sought from relevant codes of practice.

Further details of this work can be found in a briefing paper available from the following website address: <http://www.bre.co.uk/page.jsp?id=3531>

Further work is due to take place with a number of interested parties, which will investigate the performance of a variety of optical heat multi-sensor detectors to some of the test fires conducted during this research programme. Additionally, a repeatable smouldering fire with a high m/y ratio and a more challenging flaming fire with a low m/y ratio, such as a flame retardant poly-urethane fire, will be investigated.

 For further information, go to www.bre.co.uk



olympiaTM
electronics

SAFETY & SECURITY SYSTEMS

for a safer world!



Safety & Security Experts

- Since 1979
- R & D & I (Research, development and innovation)
- Exports in 72 countries worldwide

European Manufacturers with
exports to 72 countries

www.olympia-electronics.gr



IN CASE OF FIRE EMERGENCY,

THE NEW ERA IN
FIRE FIGHTING
**SOLUTIONS &
SYSTEMS**THE NEWAGE OF
FIRE PROTECTION**BREAK NEW GROUNDS OF INNOVATION**

With an enviable experience that spans over 55 successful years and 60+ countries, NewAge Fire Fighting has become a globally certified and leading brand in fire fighting solutions and systems. One of Asia's most experienced and trusted name, NewAge Fire Fighting houses vertically integrated and robust infrastructure for production of Fire Hoses & Fittings, Fire Equipment, Monitors & Nozzles, Fire Vehicles & Accessories.

OUR FIRE FIGHTING EQUIPMENT

| Hose | Branch Pipe | Nozzle | Hydrants | Hi-Ex Foam Generator
| Water Form Monitor | Fire Vehicles | Hydraulic Platform Vehicle | Foam Equipment

FIRE FIGHTING SOLUTIONS & SYSTEMS FOR

| Oil & Gas | Chemical & Fertilizer | Power Plants | Aviation | Port Trusts
| Defense | Infrastructure | Petrochemicals | Marine & Offshore



| Ambavadi Industrial Estate, Surendranagar - 363001, Gujarat, INDIA
| P: +91 2752 660500 / 288000 | E: info@newage-india.in

Fire Detection – the Past, Present and Future

Apollo was founded in 1980 and, over the past 35 years, has grown into one of the leading international manufacturers of quality and reliable fire detection solutions, with devices installed in places such as The Statue of Liberty in New York, The Royal Albert Hall in London and The Kremlin in Moscow to name just a few.

**Chris Moore**

Building upon our company's strong British heritage and brand strength, we have rapidly expanded our export business and now trade in more than 100 countries worldwide, with plans for further international expansion well underway.

The past

With over three decades in the industry, we've clearly seen a lot of changes and been proud to be at the forefront of introducing many of these new products to market, most notably addressable detectors and intelligent detector heads.

It was the 1980s and 1990s which brought probably the biggest changes to fire detectors, with the industry moving in tandem with technical advances towards addressable products, opening up a new world of opportunities to networked fire detection solutions. In 1986, Apollo Fire Detectors introduced a range of analogue addressable detectors called Series 90 with the principles employed used to subsequently develop the XP95 range, which remains one of our most popular products today. Although Series 90 and XP95 are both analogue addressable devices, they use digital protocol for panel/device communication and mark the beginning of a fire detection design age which maximised the use of advances in technology to allow detectors to communicate effectively with control panels and identify the exact location of an activation.

In the late 1990s, these moves into the world of new technology took another significant step with the introduction of intelligent fire detectors, such as our Discovery range, which essentially employed the use of intelligent sensors in detector heads to make decisions and allowed systems to be fully tailored towards their

application. For example, different levels of sensitivity for a building can be provided at different times of day such as a fire detection system switching combined smoke/heat multisensors in an entertainment venue to heat detection only when smoke machines are being used. Intelligent detectors can also analyse the signals from their smoke or heat sensors and decide whether the source is likely to be smoke from a real fire or a false reason, such as cooking fumes. The 1990s also saw the introduction of other key features, such as drift compensation – a feature that adjusts for environmental conditions such as dust to ensure a detector is not adversely affected.

These industry moves signalled a huge milestone in the reliability of detectors and set the scene for the future of the industry, with this technology still built upon today.

Current movements

The biggest immediate trend in the industry is the move towards better detection, and better differentiation. Fire detectors are getting more and more reliable, but are increasingly being designed to minimise the risk of false alarms.

These false alarms are currently the biggest challenge to the industry, and I wouldn't be surprised if at some point in the near future we see a tightening of standards and even a move toward legislating against fire detectors causing false alarms.

As well as impacting on businesses and the public, false alarms are having a seriously detrimental impact on how the fire service operates on the front line, as Adair Lewis, Technical Manager at the Fire Protection Association (FPA), explains:

"One of the biggest issues in fire protection at the moment is false alarms. In 2013, the emergency services responded to over 400,000 cases of false alarms. Not

Chris Moore is Technical Director at Apollo. Heads up a 40-strong team of Electronic Software Designers, Mechanical Design Engineers, Researchers and PhD Engineers who are responsible for designing the company's new fire detection devices.

only is this clearly a waste of resources which diverts help from potential incidents of real need, but it also influences the fire policies of different fire brigades throughout the country. An example of this can be seen in the deployment of Fire Advisors on motorbikes in areas where brigades have experienced high numbers of false alarms. Whereas this clearly cuts down on the resources needed to attend an incident, and does allow for the assessment of a situation, the downside is undoubtedly that these advisors have limited capabilities when it comes to being able to tackle a genuine fire situation.

"What we're welcoming at the FPA is the development by manufacturers of more multi-sensor fire, smoke and heat detectors which can give a wider picture of a potential situation and therefore reduce false alarms and unnecessary callouts. Also, fire safety planners need to be working with manufacturers to ensure that they are recommending detectors to their clients which are fit for purpose. Each installation can be subject to different environmental conditions; for example, there may be a factory environment where excessive heat and steam is produced, and a manufacturer is a crucial point of reference for clarification of the best type of detector to use."

Crucial to the reduction of false alarms is the development of more advanced optical detectors which can differentiate between steam and smoke. As an example, false alarms are often experienced in small hotel rooms where steam from hot showers can be interpreted by detectors as being smoke. Another issue is dust. Dust is the enemy of the fire detector as it can not only cause build up around the detection sensors, but small particles, such as those found in talcum powder, can also be wrongly identified as smoke.

Another current trend we're experiencing comes from the marketplace itself. With many buildings becoming increasingly design-focused, there's a definite need emerging for detectors which are visually less intrusive in rooms and offer an aesthetically pleasing fire detection solution. We're currently developing new detectors which are smaller, sleeker and lower in profile, and this is definitely going to be key going forward for the industry – much in the same way that mobile phones have become more attractive and more slimline.

And, as mobile phones have increased in functionality in line with new technology,

fire detection can only go the same way. In the 1980s with the advent of the first mobile phone, no one could have expected that instead of just calls and text messages, people would be able to check emails, surf the internet, watch films and TV and have live conversations across the world. In much the same way, fire detection is already starting to become more multi-functional. It's not unusual that fire detection connectivity is multi-purpose in domestic settings, with many devices integrating with security and building maintenance, but we're predicting a massive shift in this becoming more commonplace in the commercial world with sensor heads crucial to this ongoing development.

A key factor to this will be wireless and gateway connectivity, with sensors intelligently communicating with other networks, e.g. a central hub or building management system. By establishing a maintenance hub from the fire detection network, sensors in fire detectors will be able to collect and process data. We're already seeing heat detectors used as room thermostats, but the potential exists for this to go even further. In much the same way that lighting sensors react to a person's presence in a room, and heating systems can adjust to the number of people in a building, fire detectors of the future should be able to detect not only the presence of heat, smoke and CO2, but also intelligently balance this against those present on the room, and evaluate the risks accordingly.

Going a little further into the future, there's no doubt in my mind that entirely new fire detection techniques will be developed. Essentially, fire detection over the past 40 years hasn't changed in its approach – a system will see smoke, smell smoke or detect heat. Whereas this undoubtedly is an extremely solid method, the potential for a ground-breaking innovation that will turn the industry on its head certainly exists.

Setting the standard

There haven't really been any momentous industry standards since the introduction of British Standards in the 1950s, and this needs to change. By introducing new tests which will keep up with technological advances a lot faster, those responsible for determining industry standards can only benefit fire detection manufacturers and the marketplace.

Another important consideration is

the harmonisation of standards. It used to be that each country's standards were different, causing confusion and a lack of fluidity in the marketplace. Nowadays, the vast majority of European standards are practically aligned, with standards in areas which used to be miles apart, such as the USA, fast catching up. Once there is full alignment of standards, fire detection worldwide will be clearer, more reliable and a fully open playing field. Looking even further into the future, I foresee worldwide standards becoming commonplace.

Conclusion

Whilst it's impossible to comment on what the next 35 years will bring for Apollo and the fire detection industry as a whole, it's clear that the potential for change is huge, especially considering the opportunities that changes in technology present. The vast advances in areas such as wireless connectivity and communications will no doubt offer significant prospects for not only fire detection, but other networked systems such as security and maintenance.

It's important to remember though that sometimes, rather than focusing on "all singing and all dancing" innovations, the best solution is to concentrate on improving the technology that currently works, and make it work even better, rather than reinventing the wheel. Our continued focus is the emphasis on improving performance above all else, especially when it comes to both better detection and better differentiation, e.g. improving our optical scatter device technology so that devices not only detect the presence of smoke, but also what type of smoke this is. We're also keen to incorporate increased digital signal processing, increased multi-scatter detection angles and more complex algorithms to process the signals in our intelligent sensor heads, to name just a couple of current priorities.

By constantly evaluating and developing products which not only build upon tried and tested techniques, but also tackle major issues in the marketplace, such as false alarms, fire detection manufacturers can truly achieve success in developing safety critical products which are capable of protecting human life above all else – and that is a priority which will never change for the industry."

 For further information, go to www.apollo-fire.co.uk

**innovation
through
experience**

More than 30 years of Innovation & Experience

Apollo Fire Detectors have been protecting lives and properties worldwide for more than 30 years. As industry leaders, we use our expertise and experience to provide customers with the latest technology to meet the challenges of the most demanding environments.

For more information visit www.apollo-fire.co.uk



Putting a Clean, Tested and Maintained Damper on Fire

Although fire dampers are a key component in the passive fire protection of commercial buildings and multiple occupancy dwellings, many managers are unaware of their role in safeguarding the building and its occupants. Consequently, they are often equally unaware of the critical need to ensure that they are tested, cleaned and maintained at the regular prescribed intervals.



Gary Nicholls

It is one of the ironies in commercial property construction that there are tensions in the way that we build; trying to balance the equation between energy efficiency and indoor air quality. In most properties this is resolved through mechanical ventilation or air conditioning systems as the air changes achieved throughout the building can be measured and controlled.

The installation of ventilation ductwork creates its own tension, however, between the compartmentation of buildings to delay or halt the spread of fire and the need to allow air to circulate freely. The latter, of course, inevitably reintroduces a route through which fire can spread, using the path through the ventilation ductwork. Clearly this interrupts the compartmentation and presents 'chinks' in the building's passive fire protection armour.

To resolve this tension, therefore, it makes sense to attempt to compartmentalise the ductwork itself, at least on a part-time basis. This is achieved through the installation of fire dampers, which are required by law to be installed within the building's ductwork systems. The exception to this is in a kitchen extract system, which is needed to expel smoke in the event of fire and which attracts fat,

oil and grease deposits, which would impede fire dampers very quickly as they accumulate, making the extract ductwork an unsuitable location for these products. Typically, with kitchen extract systems the exterior of the ducts are given special external fire protection where they pass through fire escape routes as an alternative to fire dampers.

Fire dampers are however, in general, crucial passive fire protection products used in ventilation ductwork to prevent the spread of fire inside the ductwork through fire-resistance rated walls and floors. Essentially, they are metal louvres installed across a section of the ductwork at right-angles to its walls. When closed they will form barriers that turn the ductwork into a series of long narrow compartments designed to slow or prevent the spread of fire. The requirement is for the installation of the fire dampers to correspond with the location of the fire-resistance rated walls and floors, so that the chink in the armour is filled when necessary. Building Regulations stipulate that the fire damper should be situated within the thickness of the fire separating element – either the floor or the wall – and be securely fixed. It is also necessary to ensure that, in a fire, expansion of the ductwork would not push the fire damper through the

Fire dampers are, in general, crucial passive fire protection products used in ventilation ductwork to prevent the spread of fire inside the ductwork through fire-resistance rated walls and floors.

Gary Nicholls is Managing Director of Swiftclean.

structure. The compartment is therefore restored when the fire damper is closed, albeit temporarily.

Once installed, normally, fire dampers remain open so that the free flow of air or heat is unhindered throughout the building. In the event of a significant rise in temperature, the fire damper is designed to close, usually activated by a thermal element. This melts at temperatures higher than ambient but low enough to indicate the presence of a fire, allowing springs or gravity to close the damper blades. Fire dampers can also close following receipt of an electrical signal from a fire alarm system utilising detectors remote from the damper, indicating the sensing of heat or smoke in the building occupied spaces or in the duct system.

Hopefully, there will not be a fire, so these fire dampers will remain in the open position. This, again, can create its own problem, as fire dampers can become dirt laden, stiff and sluggish over time. As they are open most, if not all of the time, it is vital to ensure that they will still close effectively when required.

Determining this is not always a simple task because of the location of the installed fire dampers. More obvious fire prevention equipment such as fire extinguishers and bells are, due to their purpose, installed in plain sight and easily accessed for testing and repairing or replacing if faulty. Fire dampers, however, although equally valuable in delaying fires, because they are hidden away within ductwork, easily fall into the "out of mind" category, as well as being out of sight. It is essential that they are brought to front of mind when it comes to building maintenance schedules and fire prevention processes.

By providing a barrier beyond which the fire is less likely to pass, or is at least delayed from spreading, effective fire dampers save lives; so regular fire damper testing (known as drop testing) as well as fire damper cleaning and maintenance is both a legal requirement and a critical part of building fire safety management. This is governed by the British Standard BS9999:2008.

BS 9999:2008 gives guidance for the two main types of fire damper. Spring-operated fire dampers should be drop tested, cleaned and maintained at intervals of no greater than 12 months; while all other models (such as remotely operated

BEFORE



AFTER



ones) should be drop tested, cleaned and maintained at least every two years. This is because normal use of the ventilation system gathers an accumulation of contamination on the fire damper and its operational parts. This must be removed and the fire damper tested regularly to ensure that it operates as designed, should a fire occur.

In a healthcare setting, additional care is needed, due to the more vulnerable nature of the building occupants, many of whom will have impaired mobility and will therefore require additional time to be evacuated than a more able bodied office worker or younger, fitter domestic resident. Care sector applications must therefore also comply with the Health Technical Memorandum (HTM) 03-01: Specialised ventilation for healthcare premises Part B: Operational management and performance verification. This memorandum is issued by the Department of Health.

Before you can test or maintain a fire damper, you must be able to locate it. This may sound basic, but it entails identifying and logging the location of every fire damper in each building in which they have been installed. This is a task for the responsible person and a clear record should be kept of where each fire damper is located. This can be easier said than done.

Depending when the ductwork and the fire dampers were installed, there may have been greater or lesser understanding of the importance of fire dampers. Some fire prevention or health and safety professionals will therefore inherit clear documentation of the locations of fire dampers and records of past testing. Others will have to start with a clean sheet and physically track down the fire dampers. This is, unfortunately, still more common than we would wish.

As they are installed within ductwork, some fire dampers will be inaccessible even once that have been located using plans and drawings. In order to test these, access doors will have to be retrofitted in order to perform the drop test, cleaning and any maintenance required. This is a specialist job as it must be done without compromising the integrity of the ductwork, either for use as a ductwork system component or as a means of containing fire.

Once located and accessed, the type of fire damper must be determined. Each

fire damper should be identified and given a schedule of testing on a frequency that will comply with BS: 9999 (and HTM 03-01 in care settings.) The regular testing interval for fire dampers should be agreed with the local Fire Prevention Officer and a maintenance schedule should be established to ensure that testing, cleaning and maintenance are all carried out on time at the correct intervals.

Each fire damper must be tested individually. There are two main types of fire damper, those which are spring operated and those which are not. Spring operated fire dampers must be tested and cleaned at least every twelve months, while non- spring operated models must be tested, cleaned and maintained at least every two years. The method used for testing fire dampers is known as drop testing and is designed to establish that they close properly; and that, when closed, they do not lose air pressure across the damper. Each fire damper should be cleaned, lubricated, drop tested to ensure they are in good working order and reset ready to offer protection in the event of fire.

If the fire damper does not pass the drop test, it will require maintenance. This will often involve the replacement of the linkages or springs that operate the opening and closing action. Or the operating remote system may exhibit a fault. Any faults should be identified at the inspection and testing stage and a remedial work plan drawn up. Once any problems have been identified it is essential that the recommended remedial action is taken and the repair effected rapidly. Once you know that the passive fire protection has a flaw, you will be aware that the building is more vulnerable to fire, so maintenance must be of the highest priority. An expert testing and maintenance provider should be able to effect repairs within a very short time frame. If faults are not rectified in a rapid and timely manner, this could be construed as negligent.

It is essential to ensure that there are accurate records of fire damper inspection, cleaning, drop testing, and maintenance, including before and after photographs of cleaning and any repairs. This is essential for a number of reasons, the first of which is peace of mind. Lives may depend on the fire damper being in good working order, so the building manager should be confident that it is.

Secondly, these records may be needed if there is a fire, particularly should the worst happens in the form of a fatality. In the event of an investigation, accurate, dated, photographic records will help to demonstrate that there has been no negligence. This will help to protect those responsible for the building from prosecution for negligence, the penalties for which are severe and can include imprisonment.

Thirdly, this documentation can be presented to the building's insurer to demonstrate that the building's passive fire protection was compliant and that there were no negligent contributory factors to the fire. Insurers expect that those they ensure will comply with all their legal responsibilities. It is advisable to keep more than one copy or to use cloud storage for maximum peace of mind.

As with so many elements of any building, the adage is, if it is installed, it should be compliant. Fire damper testing is an expert task, but it is also a relatively inexpensive one, particularly when compared with the likely outcomes of not complying with the testing requirements. Even if the building has more than one type of fire damper, a specialist provider will be able to help devise a cost effective testing, cleaning and maintenance schedule that will keep the building compliant and protected. The consequences of not maintaining fire dampers are far too costly to contemplate, both in material and personal terms, for everyone involved.

 For further information, go to www.swiftclean.co.uk

Before you can test or maintain a fire damper, you must be able to locate it. This may sound basic, but it entails identifying and logging the location of every fire damper in each building in which they have been installed.

intersec

SAVE THE DATE
Jan. 17 – 19, 2016

Join us to meet the world of security in one place

What's new in 2016?

- Safety Design in Buildings and Building Materials
- Home Automation and Smart Home Equipment
- Radio Frequency Identification (RFID)
- Physical & Perimeter Security
- Critical Infrastructure Protection (CIP)
- Job Pavilion

See you in Dubai next year!

www.intersecexpo.com



 messe frankfurt

There's More to Glass than Meets the Eye

Glass production has come a long way in the past two decades and a material that was previously just used for windows is now an integral part of both the internal and external fabric of many 21st century buildings.



Chris Davis

But these new applications are coupled with stringent demands and legislation that determine the levels of durability, stability and warranty requirements of the modern construction, transport and engineering markets, not least of which is the role of glass in passive fire protection.

You only have to visit any major city in the world and look around you to see just how much modern architecture is based around the use of glass. Be it the soaring heights of The Shard in central London or the 2013 architectural award winning Harpa Hall in Reykjavik, glass is the material of choice for much of the 21st century's major buildings.

This increased use of glass has been driven by a number of factors. Architects and designers have recognised the socio-environmental importance of natural light in the work place and now do all that they can to ensure that workers, wherever they are in a building, can benefit from exposure to daylight. By incorporating more glass in a creative way they are also able to maximise the available space,

an increasingly valuable commodity as society becomes more concentrated into urban areas. Alongside this shift in design ideals there has been considerable development in recent years in glass technology. This has allowed architects to let their imaginations go to work as they realise that often their dream facades can be made a reality thanks to the latest construction techniques.

The use of glass is not just restricted to the exterior of many buildings; it is often an integral feature of the internal fit out, being used for balcony walls, stairways, atria glazing and flooring, and it is easy to get carried away with the glamour and excitement of these new structures. However visually impressive they may be, these buildings must be safe and this is where specialist fire protection glass can add real value as it meets the necessary criteria for safety without compromising on the architectural aesthetics or optical qualities of the glass.

The solution is to use fire resistant composite glass panels, be they flat or curved, which are fitted into a supporting



Chris Davis is Liquid Composites Manager at Kommerling.

structure. Recently companies such as Pilkington NSG invested in special purpose-made equipment that utilise some of the high quality manufacturing techniques found in the automotive arena, where they have been using toughened, shaped glass for windscreens for a number of years.

All structures require built-in protection to limit fire movement, prevent collapse and safeguard occupants against the effects of smoke and fire and a number of glazing technologies are now available. Graham Ingle of Pilkington Plyglass explains: "Products fall into two distinct classes: either integrity (that is, a physical barrier against fire and flames) or insulation (that is, providing a physical and heat barrier against fire, determined in standard tests by measurements of surface temperatures on the non-fire side, which must be less than a rise of 140 degree C over a standard test period, for example, 30, 60, 90 or 120-minutes). Designers no longer need to limit their aspirations for fear of being unable to provide effective transparent barriers against fire."

What are the challenges?

There are several key factors to be considered when developing and selecting fire resistant glass, namely:

- The need to design a support structure that will not deflect and soften as the temperature rises and hence compromise the structural integrity of the composite glass panels.
- To use a system that will safely bond fire glass into a composite with structural glass panels without activating the intumescent layers in the process. Ideally the bond should allow the fire material to be suspended and not directly loaded.
- The glass composite should be flexible in manufacture to allow for the addition of supplementary layers of material. These materials will vary depending on where in the building the glass is to be located but could include slip resistance for flooring, or thermal and/or solar control leafs for vertical applications if required.
- The liquid composite material should provide integrity and not de-polymerise or de-bond at temperatures close to the critical 140 degrees C.



Image courtesy of Kommerling

- Specifications should be supported with robust calculations surrounding the mechanical performance requirements and definitive test data or relevant assessments.

One of the most successful means of meeting these challenges is with the use of liquid composite laminating materials. Liquid composites have been highly successful in pioneering the lamination of glass to glass product and more recently have proven competent in the bonding of difficult substrates, namely non-asymmetrical materials, and materials with differential stresses and uneven surfaces. An additional benefit of the use of an intumescent interlayer insulation, such as is found in Pilkington Pyrostop, is that it provides inherently good sound damping, which can be still further enhanced with special acoustic formulations. This makes them ideally suited for use as whole areas or as inserted glass floor panels.

In addition to fire resistance and sound damping, the glass elements within a building may also have a role in providing UV protection as well as the decorative aspect, which may be colour and or texture-based. By using exothermic passive curing, fire resistance bonding solutions can be applied to the glass without compromising on the integrity of the bond be that to a symmetrical or asymmetric, tempered, flat or curved substrate.

The nature of Kommerling's passive curing regime results in the chemical reaction inducing a small temperature

change during the process and it is ideally suited for applications where thermally induced stresses or applied vacuum processes would be problematic. The addition of conservation-grade products, such as the Koediguard Conservation, provides complete UV resistance up to 400nm. This is a real benefit as many protective fire glasses would normally be unstable under UV light in external applications.

Timber-Framed, Load Bearing, Fire Resistant Glass Floor!

At first glance this heading seems like a highly improbable scenario, but as demand for more environmentally friendly building materials increases so architects are reviewing and revising the use of timber in conjunction with glass. The challenge was to produce something to meet BS EN 1365-2:2000 (other similar standards apply across the globe) which would provide insulation and integrity from fire and a concurrent load bearing performance so that the floor was suitable for classification as a means of escape from entrapment in the event of a fire.

Design tolerances ensure that the relationship between the intumescent glass and gaskets allow both materials to expand forming an effective flame and smoke seal to all perimeter edges. This performance requires the liquid composite bond to fully suspend the fire glass beneath the loaded pane. Any transferring of the normal pedestrian operating loads would result in fracturing of the thinner layers of float within the fire glass.



Images courtesy of Kommeling



Conclusion

As architects continue to push the boundaries in terms of how they want to use glass, buildings that once seemed futuristic are starting to appear in the world's leading cities. This would not be possible without the continuing support of manufacturers like NSG and Schott who work closely with specialist suppliers to help make these visions a reality. By responding to those dreams and desires this team approach is providing glass that delivers distinctive eye-catching aesthetics, durable crystal qualities of glass and provides the highly desirable working and leisure environments whilst offering the highest levels of mechanical and fire safety for all users.

Blast Protection

The threat of a combined attack from external forces can be very real for a number of organisations; therefore

safeguarding employees and visitors is paramount. When it comes to preventable measures, Martin Brown Sales Manager at Schott looks at the reasons in some cases why integrating a combined fire resistant and safety glazing system can be the best solution.

For fire practitioners, specifiers and facility managers involved in the design of a building, safeguarding a building's occupants is number one on the list. Whether this is from restricting the spread of fire or helping to protect workers and visitors in more vulnerable situations, there are certain areas where no compromise in terms of cost and design should be made when it comes to safety procedures – as both can have a devastating effect on individuals and businesses.

Glass has an important role in protecting properties, employees and customers. Safeguarding employees and customers against acts of violence in the workplace calls for specific types of security glass and it is important to make sure that the most appropriate glass is used for the application. Thanks to the continuous development and refinement of fire-resistant glass products modern glass architecture can implement its principles of transparency and openness consistently both on the outer façades as well as in building interiors.

In certain more vulnerable applications,

such as in banks, check cashing institutions, petrol stations, store security entrances, embassies and government buildings, the threat of attack is rising; either physically to steal property or the ultimate threat from firearms or bomb blast. Organisations are responsible for their employees and must consider and assess the threat to its employees and ongoing business – and this is where a combined fire resistant and security glazing system is an ideal solution, for example, designed to meet both of the test standards EN 1364-1 (Fire Protection) and EN 1063 (Bullet Resistance).

When visitor numbers are high and controlling who should and who should not have access remains a high priority; how do you remain secure but still open for business? By utilising glass within the external entrance, a sense of openness is immediately created, while by using specialist glass partitions within the building, security can be attained by limiting people movement, but all the while seeing them. Controlling the crowd is sometimes necessary, but not user friendly if segregated with solid walls.

Specifiers can achieve compartmentation by using glass and still resist attacks from firearms or blunt instruments. The solution is based on special laminates comprising ultra-clear glass, laminated with clear polymer sheets to form rigid high strength transparent glass that can be installed into doors and window frames just like ordinary glass. Overall glass thickness and weight will be greater than standard, but to the innocent bystander, it will look like ordinary window glass. The additional layers providing adequate protection from ballistic and bomb blasts.

Ultimately, human safety is paramount and so careful consideration of the latest fire resistant and security glazing is particularly advised so that the right product is chosen to satisfy safety, architectural design and cost.

 **For further information, go to**
www.kommelinguk.com
www.pilkington.co.uk
www.schott.co.uk

Footnote: The author would like to acknowledge the assistance of Graham Ingle, Sales Manager – Clear Fire Protection at Pilkington Pyrostop, and Martin Brown, Sales Manager – Technical Glass Solutions at Schott UK in the preparation of this article.

 PILKINGTON

 NSG GROUP

When fire breaks out, you need a glass that keeps its cool.



Pilkington Pyrostop® and Pilkington Pyrodur®

In the event of fire, Pilkington **Pyrostop®** can provide insulation against heat for up to 180 minutes, in appropriate frames; with Pilkington **Pyrodur®** also able to provide full insulation for a short period of time – protecting the property and giving people more than enough time to vacate the building safely. As well as acting as a barrier against hot gases and flames to increase protection, they reduce any panic by turning opaque. Available in a range of thicknesses to suit every need, Pilkington **Pyrostop®** and Pilkington **Pyrodur®** can definitely stand the heat.

For more information on all the products in our fire-resistant range, including our new advanced toughened glass Pilkington **Pyroclear®**, visit www.pilkington.co.uk/fire-resistant, email pilkington@respond.uk.com, call 01744 692000 quoting 18842 or contact one of our stockists.

Stockists

Anders Glass Ltd - Manchester 0161 736 2487	Float Glass Industries Ltd - Manchester 0161 946 8000	Diamond Glass - Dublin +353 1620 5000	Excel Glass Ltd - Belfast 02890 382121	Nicholls & Clarke Glass - London 0207 5400 310	Pilkington Basingstoke 01256 469651	Pilkington Pyrostop 01773 520 000	Independent Glass - Glasgow 0141 613 1599	Exeter Glass Centre - South West 01392 364 364	Lee Glass & Glazing Ltd Nottingham 0115 9602828
--	--	--	---	---	--	--------------------------------------	--	---	--



Fire-Cryer® Plus Voice Sounders

No Compromise - Be Seen, Heard and Understood!

The family of Fire-Cryer® Plus Voice Sounders and ancillary products enables a simple sounder circuit to be turned into a versatile voice messaging system. With superb clarity, integrated synchronised LED strobe and 7 selectable messages from a multi-lingual library of hundreds, the Fire-Cryer® Plus enables a standard fire alarm system to signal much more than just fire.

Using just 2 wires, Fire-Cryer® Plus is 100% synchronised and offers four unique fully compatible models - wall or base mounted, open area and industrial units.

A dedicated interface is available for integration with gas extinguishant panels to provide a cost effective and clear delivery of staged alarms.

 EN 54-3 Approved



CELEBRATING
20 YEARS
1994-2014

Vimpex is a specialist manufacturer and supplier of Fire Detection, Alarm and Evacuation products.

www.vimpex.co.uk

Tel: +44 (0) 1702 216 999

VIMPEX
Shaping Alarm Technology

Fire Safety Teamwork and Effective Communication

Providing an acceptable level of fire safety in a building or process area requires effective teamwork and communication from all interested parties, with proper support from management and administration. This article highlights how the teamwork must be effective by highlighting fire incidents and situations in which one or more members of the team failed to perform their responsibilities.



William E. Koffel
P.E., FSFPE

Does The Calculated Occupant Load Match The Proposed Use?

During the design process an architect or code consultant will perform occupant load calculations and the egress system is designed based upon those calculations. Codes typically say that the occupant load is to be based on the higher of two values; one using the occupant load factor and the other using the actual anticipated number of occupants. However, this latter value is often overlooked and early in the design process may be difficult to obtain. It is also not common for the basis of the calculated occupant loads to be shared with the eventual user of the space. This became very apparent on a project in which we were providing third party inspection services for the local code official. Walking through a religious facility we observed a classroom in which rows of chairs were arranged to serve as an overflow room during the first worship service. When we indicated that the arrangement was not permitted due to the occupant load in the room, the immediate response was that no one told them that. In this instance, we were able to verify that the egress capacity and arrangement was acceptable due to a door to the outside directly from the classroom.

A more successful scenario involved the ballroom and meeting space in a new hotel. We performed the initial occupant load calculations and then contacted the sales group for the hotel who were marketing the meeting space. We asked for their sales literature and determined that their numbers did not

always match our numbers. We selected the higher number, which was not always the hotel's number or our calculated values, and presented those values to the code official as the occupant load for each space.

Lack of Coordination Within The Design Team

A two-story vertical opening was to be protected using a draft curtain and closely spaced sprinklers, as permitted by NFPA 13. The mechanical engineer, and the sprinkler system shop drawings, identified the draft curtains as being provided by others. Unfortunately, the draft curtains were not shown on the architectural plans. When the fire marshal arrived to witness the acceptance tests for the sprinkler system, an inquiry was made regarding the draft curtains. Since the building was essentially ready for occupancy, installing the draft curtain was not desirable or easy to do.

As a design firm, we often see changes made to the architectural plans very late in the design process. We are then challenged to modify the fire protection system design based upon the last minute changes to the plans. It is essential that all members of the design team work together to ensure coordination of the construction documents. The International Building Code empowers the building official to require the identification of a design professional in responsible charge. That individual is responsible for reviewing and coordinating submittal documents prepared by the design team. (Section 107.3.4, International Building Code – 2012 Edition)

Design Team and Emergency Planning

Working with a new hospital to develop an emergency plan, we were looking at doing certain things on a smoke compartment by smoke compartment basis. However, the design of the fire protection systems (automatic sprinkler systems and fire alarm systems) was not based upon the smoke compartmentation concepts in the design. As such, the desire to provide occupants of different smoke compartments with different messages was challenging. It was also noted that if the first initiating device is a manual pull station, the location of the manual pull station may not actually be the smoke compartment of fire origin, especially since there is not an exit within each smoke compartment. It should be noted that the 2012 Edition of NFPA 99 now requires that the fire alarm notification zones coincide with smoke compartment boundaries or be in accordance with the facility fire plan (Paragraph 15.7.4.3.1, NFPA 99-2012). The designer of the fire alarm system will need to coordinate the design with the architectural design (smoke compartments), the facility fire safety plan (sometimes not available during the initial stages of design), or both.

Protection of Penetrations of Fire Barriers

It is not uncommon for construction documents to contain a generic statement that penetrations of fire barriers shall be protected as required by the applicable code. Various members of the design team will then show the penetrations of the fire barriers without any regard for how to protect the penetrations. In other words, the design team will often leave the details to the contractors. As the construction proceeds it is then determined that there is no listed system for the penetrations that occur in a given fire barrier. Absent a listed system, a common solution is to protect the penetrations with a system based upon an engineering judgment. Engineering judgments are typically prepared by the manufacturer and are usually required to be reviewed and approved by a third party engineering firm or the code official. Engineering judgments are permitted by the codes

as an alternative method of compliance, or equivalency. However, proper consideration of penetrations during the design could reduce the need for engineering judgments on many projects.

Coordination With Emergency Responders

Recently we were working with a large campus of buildings and it was determined that none of the connections on the hydrants or fire department connections were compatible with the connections used by the responding fire service. While it has not yet been determined if the error originated with the design team or with the installing contractor, certainly there was a failure to confirm the type of connectors used by the emergency responders. On other projects we have noted where the clearance height or turning radius is not compatible with the equipment used by the responding fire service.

System Testing and Preventive Maintenance

A two year old, single story retail building that was protected throughout with an automatic sprinkler system was totally destroyed by a fire as the holiday shopping season was beginning. The post fire investigation determined that the underground gate valve at the point of connection to the public water system was essentially closed. Design standards, such as NFPA 13, and building codes typically do not require such valves to be monitored in the open position. The installing contractor provided main drain test results as part of the acceptance test procedure that were not accurate. A third party engineering firm verified that a main drain test was performed and the results were accurately recorded. Contractors providing routine inspection

and testing services for the period of two years did not perform a main drain test. The contractors claimed that they were not able to perform main drain tests because the discharge for the test connection was not piped to the outside or to a drain connection capable of handling the flow (as required by Paragraph 8.16.2.4.4, NFPA 13-2013). As such, various members of the fire safety team responsible for the automatic sprinkler system (the installing contractor, the third party engineering firm, and the contractors performing ongoing inspections and tests) failed to properly perform their responsibilities and a significant fire loss occurred as a peak retail season was approaching.

Solution

It is interesting to note that performance based design guidelines and fire risk assessment guides reference including all the stakeholders in the design process or risk assessment procedure. Unfortunately, including all the stakeholders in the process is not commonly done when the design is completed using prescriptive based codes or "deemed to comply" solutions. Many of the scenarios referenced above were the result of inadequate communication between all of the stakeholders involved in fire safety. The problem scenarios identified above can only be prevented and a more effective level of fire safety provided when all stakeholders are part of the design and construction process. In addition, the design and construction process needs to take into account the operational needs and considerations of the facility and the emergency responders.

 For further information, go to www.koffel.com

A two year old, single story retail building that was protected throughout with an automatic sprinkler system was totally destroyed by a fire as the holiday shopping season was beginning. The post fire investigation determined that the underground gate valve at the point of connection to the public water system was essentially closed.

William E. Koffel is President of Koffel Associates, Inc. and Chairs the NFPA Correlating Committee on Life Safety.

The CE Marking – Explaining its Jargon and Acronyms

The Construction Products Regulation (CPR) is intended to provide for the free movement of construction products across EU countries. It can be summed up in the following statement.



Niall Rowan

‘Manufacturers who have had their products successfully evaluated against a European Technical Specification, which covers all the parameters to ensure that the products is fit for purpose, can CE mark them demonstrating that the declared product performance has been obtained’.

It sounds so easy doesn’t it? Do a few tests; have somebody take a quick look round your factory and a market of 450 million consumers is ready for the taking. If only... in reality there are a number of hoops to jump through depending on whether CE marking is possible (it isn’t in some cases) or mandatory (it is in some cases) and what type of European Technical Specification is used. So what do you need to know?

European Technical Specifications – what are they?

European Technical Specifications are the ‘common technical language’ of the CPR and the route to CE marking. They are NOT fire test standards or indeed any other type of test method. They are the specification which contains all the product characteristics necessary to determine a product’s fitness for purpose in its intended use. So, for example, the European Technical Specification for a flooring material, will include recommendations for its reaction to fire performance, but more importantly, it will also contain recommendations

for resistance to abrasion, hard and soft body impact and other necessary floor characteristics. Some of these product characteristics e.g. reaction to fire are legislated by Member States and, in these cases, the European Technical Specification must address them adequately.

There are two types of European Technical Specification:

- 1 European Product Standards (hENs) which are drafted by CEN the European Standards body; and
- 2 European Assessment Documents (EADs) which are written by EOTA, the European Organisation for Testing and Assessment.

Which type of European Technical Specification is used was decided by the European Commission some time ago but unfortunately, there was no logic to the process. For example, doors are covered by hENs, but the wall into which they are fitted is covered under an EAD. This curious dual system is probably the single most confusing and annoying aspect of the CPR and the one which gives rise to whether CE marking is mandatory or not.

What is in the European Technical Specification?

Each European Technical Specification lays down the characteristics that the product must satisfy including the

pan-European test methods such as fire tests that are used to measure them. The characteristics are grouped under the following Basic Works Requirements:

- Mechanical resistance and stability
- Safety in case of fire
- Hygiene, health and environment
- Safety in use
- Protection against noise
- Energy economy and heat retention
- Environmental Product Declarations
- Sustainable use of natural resources

Assessment of Verification of Constancy of Performance AVCP

The European Technical Specification also includes the system of Assessment of Verification of Constancy of Performance (AVCP) for each product. These systems vary from, at the lowest rigour, system 4 (Manufacturer’s declaration – “I say my product is ok so it is ok”) through to, at the most rigorous end, system 1 (third party product certification – “the certification body I have used who is totally independent of me has said my product is ok, so it is really ok”).

Most fire resisting products such as fire doors etc. are system 1 (highest rigour), while most products with a reaction to fire performance are system 3; unless e.g. a flame retardant is added or there is some other process used to improve the fire performance, in which case they also become system 1. What do these systems mean? Take a look at the table below.

So, for a product that is system 3, all that a manufacturer needs to do is organise the relevant tests with an independent laboratory, document his factory production control system, make a declaration of performance and then he can CE mark his product.

However, for a product that is system 1, the manufacturer has to involve a third party body (certification body or technical approval body) in the process. This is a crucial difference – not because it makes it more complicated and expensive – but because it brings in the involvement of an independent third party to ensure the quality of the product. It is a crucial difference and is why most fire products are system 1

Many stakeholders in the construction industry are labouring under the misunderstanding that CE marking is mandatory for all construction products. This is not the case. What the product is determines whether CE marking is mandatory or not.

because they are deemed to be critical products for life safety.

For a product that is system 1, the third party body will select the test specimens and organise the relevant tests with an independent laboratory. Assuming the test results are ok and that the manufacturer has an acceptable factory production control system, the third party body will issue a certificate of conformity of the product with the European Technical Specification. Then the manufacturer can make a declaration of performance and CE mark his product accordingly.

Timescale

The CPR came into force in April 2011 and its provisions became effective in July 2013. This means mandatory CE marking for some construction products is already in force.

CE marking – is it mandatory, voluntary or even possible?

If the product is covered by a published and available European Product Standard (hEN), then CE marking is mandatory.

However, many of these hENs have simply not been written yet or have not been completed, so while they are still being written, CE marking is not yet possible.

If the product is covered by a published and available European Assessment Document CE marking is possible but is only voluntary; it will not and will never be mandatory. Many stakeholders in the construction industry are labouring under the misunderstanding that CE marking is mandatory for all construction products. This is not the case.

So, what the product is determines whether CE marking is mandatory or not. By any reasonable consideration, this is a nonsensical situation and is the result of a previous decision by the European Commission to remove mandatory CE marking under the predecessor to the CPR. It surely makes no sense to make CE marking mandatory for e.g. fire dampers and fire door ironmongery, but not structural fire protection products or penetration seals. On what basis is one more important than the other?

System of AVCP	Tasks for the Manufacturer	Tasks for the Certification body, Technical Approval Body or Test laboratory
System 1	Factory Production Control (FPC) Make Declaration of Performance CE mark product	Initial testing Initial inspection of factory and FPC Issue a Certificate of Conformity Continuous surveillance
System 3	Factory Production Control (FPC) Make Declaration of Performance CE mark product	Initial testing
System 4	Initial testing	Nothing

Niall Rowan is Technical Officer for the European Association of Passive Fire Protection and the Association for Specialist Fire Protection.

European Technical Specifications are the ‘common technical language’ of the CPR and the route to CE marking. They are NOT fire test standards or indeed any other type of test method.

Industry initiatives on mandatory CE marking

In order to create a level playing field in the European market by making CE marking mandatory for all passive fire protection products, the European industry has been in dialogue with the European Commission. The purpose of the dialogue was to explore the possibility of making CE marking mandatory for all products by ‘converting’ the European Assessment Documents (EADs) into product standards (hENs). To do this requires a mandate (an instruction) from the European Commission to CEN to draft appropriate product standards to cover these products.

The dialogue has by and large been successful and a draft mandate – covering the products manufactured by members of the European Association for Passive Fire Protection (EAPFP), of which the ASFP is a member, and the European organisation for paints, printers’ inks and artists colours (CEPE) – is now slowly working its way through the Commission and CEN. However, progress has not been smooth, with some objections, particularly from some bodies who work with European Assessment Documents. However, the industry remains undeterred and will be successful in its endeavour to obtain a mandate for CEN to produce hENs which will make CE marking mandatory for all passive fire protection products and thus create a level playing field.

How can the EAPFP/ASFP help?

The EAPFP/ASFP have published a short (6 page) guide to the Construction Products Regulation for the benefit of its members and other stakeholders. The document is free to download from the EAPFP and ASFP websites (see <http://is.gd/F4pmbu>). It contains an expanded version of the table above and is updated regularly.

The ASFP/EAPFP will continue to work to make CE marking mandatory for passive fire protection products to create a level playing field in the European market.

For further information, go to www.eapfp.org www.asfp.org.uk

What is the situation for each type of Passive Fire Protection Product?

The state of play for each passive fire protection products as at December 2014 is shown in the table below.



Product	CE Marking status (December 2014)	
	European Technical Specification	
	EAD*	hEN
Reactive Coatings for Fire Protection of Steel Elements	Voluntary under ETAG* 18-2	EN 16623 prepared by CEN TC 139 WG 13
Renderings and Rendering Kits intended for Fire Resisting Applications	Voluntary under ETAG* 18-3	To be prepared in CEN once a mandate for these products is agreed
Fire protective board, slab and mat products and kits	Voluntary under ETAG* 18-4	As above
Fire Stopping and Fire Sealing Products Part 2: Penetration Seals	Voluntary under ETAG* 026-2	As above
Fire Stopping and Fire Sealing Products Part 3 : Linear Joint and Gap Seals	Voluntary under ETAG* 026-3	As above
Reactive & Mechanical Air Transfer Grilles, (Fire Resistant and Cold Smoke Control Fire Resistant Types)	Voluntary under ETAG* 026-4	As above
Cavity Barriers	Voluntary under ETAG* 026-5	As above
Fire Resisting Duct Sections	Voluntary under ETAG* 018-4	prEN 15871 agreed to go for CEN Enquiry
Smoke Control Duct Sections	N/A	Mandatory from 1 July 2013 under EN 12101-7
Fire Resisting Dampers	N/A	Mandatory from 1 July 2013 under EN 15650
Smoke Control Dampers	N/A	Mandatory from 1 July 2013 under EN 12101-8
Fire Doors	N/A	Mandatory from 2019 EN 16034 now available
Fire Door Hardware	N/A	Mandatory under several standards
Gypsum Boards	N/A	Mandatory under EN 520

EAD* European Assessment documents have been developed from ETAGs which were used under the predecessor to the current Construction Products Regulation. All ETAGs will be changed to EADS in the next year or so.



Recent NFPA statistics indicate significant injuries, loss of life and property damage due to clothes dryer fires in residential buildings. At the same time, code requirements for dryer exhaust ductwork in multi-family residences have been difficult to achieve in real-world conditions – until now.

Introducing new FyreWrap® DPS Insulation for dryer ducts and plenums.

FyreWrap® DPS Insulation is an innovative duct wrap that provides a safe and cost-effective means to achieve a 1-hour fire resistance-rated enclosure for routing dryer ductwork through rated wood construction. It utilizes a lightweight, high temperature, low bio persistence fiber blanket specifically designed, UL tested and classified for this

critical application. It also provides code compliant fire protection for combustible items such as plastic pipes in the plenum area. FyreWrap DPS Insulation features a ½”, single layer design that is flexible and easy to cut, fabricate and wrap to fit tight spaces, providing time- and cost-savings on many projects.



More information on FyreWrap DPS and our complete line of FyreWrap products is available at www.arcat.com and www.unifrax.com or by calling 716-768-6500.



Sliding Fire Doors

In today's world safety is becoming more and more important for businesses, institutions and facilities. Whether you work in the education, healthcare, government, commercial, hospitality or industrial sectors fire safety plays a huge roll in how a building is designed.



Matthew Hartung

Fire doors are a very important component of a building's fire safety and fire protection plans. The purpose of a fire door is to slow or stop the spread of fire and smoke in a building giving the occupant's time to safely vacate the building. Fire doors are available in numerous types; coiling, sliding, swinging and then multiple variations within each of the types. This article will focus on a sliding fire door system.

Fire Door Certification

For a fire door to meet codes, it needs to be certified by Underwriters Laboratories (UL and ULC) and Factory Mutual (FM). These companies will test a fire door system to ensure it meets the safety standards. The National Fire Protection Association (NFPA) sets the codes that UL and FM test to.

Fire door manufacturers can certify their doors, both for identification purposes and to guarantee their performance in a fire situation. Fire doors will typically have to meet or exceed industry fire safety

testing standards including UL and FM and are compliant with all NFPA 80 standards. To have a fire door certified that it meets the necessary codes a manufacturer will submit its drawings and a completely built door to the testing facility. They will perform the necessary tests and approve the door as meeting certain classifications. Should anything change with the design of the fire door the manufacturer would have to resubmit drawings and door to be tested again. In the case of UL, they will make random visits to the manufacturer to ensure that the doors are still being built to the approved design.

There are numerous requirements that a fire door must meet to be up to code. One example of a requirement from NFPA 80 is that the doors closing system must be tested at the time the door is installed and the door shall be inspected and tested not less than annually. The doors must be checked regularly for conditions that may affect the operation of the door. The testing requirements will vary from door system to door system.



Image courtesy of www.americanmetaldoor.com

Matthew Hartung is responsible for Technical Sales at Door Engineering and Manufacturing.

Selecting the right Fire Door

Selecting a fire door system is based on a variety of factors derived from building requirements, how the door is designed to function and what the customer wants. One of the first things you should look at is what and how the fire door is going to be used. Is it going to be opened and closed all throughout the day or will it primarily be closed/open? What types of traffic will be using the door; vehicles and people or just one or the other? These factors will influence the kind of fire door you may need, coiling vs sliding vs swinging. For example, a door that is going to see a lot of usage will be better suited for a sliding door due to the high cycle operators that are available for them and their more robust construction. What or how it is being used will also influence other elements of a fire door. Listed below are several of the other key factors to consider when choosing a system that will meet the needs and wants of the application.

Opening Size

The size of the fire door can determine what type of door needs to be used, either Hollow Metal or Tube Frame.

Hourly rating

The hourly rating of a fire door is how long it is able to block a fire. The rating of a fire door is three-quarters of the time that the wall it is being installed on is rated for. So a 2 hour rated wall will need to have a 1.5 hour rated fire door.

Temperature rise rating

A temperature rise rating is how long a fire door can control the heat of a fire, important in areas where people need to pass by during a fire. Different types of door construction will have different ratings. For American Metal Door a Hollow Metal Fire Door has a temperature rise rating of 250 degrees for 30 minutes where a Tube Frame Fire Door has a rating of 450 degrees for 30 minutes. This means that in 30 minutes the door's temperature on the non-fire side can't increase more than 250/450 degrees.

Wind-load rating

Does the door have to withstand a certain Pounds per Square Foot (PSF) If so this can affect how thick the fire door has to be constructed.



Image courtesy of www.americanmetaldoor.com

Available Clearance

How much headroom is available will determine how the operating system for the door is setup. Also how much clearance there is for the door to open can determine what style of door you need; single slide, bi-parting or tele-slide and which side the door opens to. It is also important to know that a 4-inch overlap is needed at the head of the door and at the jams of the door for it to meet fire door codes.

Insulation

Different door types will have different insulation types which will offer varying degrees of temperature rise protection. Depending on your building requirements you may need a specific insulation. Tube Frame Fire Doors will typically have a fiberglass batt insulation and a Hollow Metal Fire Door will typically have a Mineral Fiberboard Insulation (MFI). MFI provides a higher temperature rise rating.

Type of closing system

A standard closing system is counterweight or cable reel but there are other variations as well. An electro-mechanical release can be synced with the buildings fire system so it will automatically close if there is a fire. This option also has a 72 hour battery backup. In situations where a door is kept primarily open an option could be an electromagnetic device which will hold the door open until the fire alarm is triggered.

Operator

Does your door need to open and close at a certain speed? How many times a day approximately will the door be opened and closed? These factors will determine the

type of operator that should be used for the fire door. A typical sliding door will have an opening speed of 11-24 inches per second.

Optional requirements

Vision lites, mono-rail notch, security devices, pass door etc. For many reasons you may have additional requirements for your door system. There are often times that you don't want to have to open the entire door just for someone to walk through. In this situation having a pass door that is labeled as well is the ideal solution. Some facilities require large objects or equipment to travel through the fire wall on a mono rail system. The sliding fire door allows you to close the fire door around the rail system securing the opening. Fire safety isn't the only concern, keeping your facility safe and secure can be just as important. With available security devices such as warning horns, voice commands alerting that the door will be closing and mortise style locks you can be rest assured that your fire door is providing the ultimate in safety.

Many manufacturers are able to engineer and design a door system to meet a customer's specific need, which is a great option for those unique applications. Since these unique door systems will likely vary from what a company has tested and been certified for though, additional testing on the exact door system may be likely. Working closely with the manufacturer will ensure that you not only get the fire door system that you want but that it meets the fire codes.

 **For further information, go to**
www.doorengineering.com

IFP

INTERNATIONAL FIRE PROTECTION MAGAZINE



FREE Subscription

To subscribe to IFP Magazine and for unlimited access to our digital resources, please register at

www.ifpmag.com

IFP Magazine App



Download for FREE today

- Latest Issues
- Back Issue Archive
- And much more
- Coming soon...**
- Extra Articles
- Videos
- Product Blogs

www.mdmpublishing.com

ADVERTISERS' INDEX

Advanced Electronics	2
Amerex Corporation	25
Apollo Fire Detectors	63
BIOex	17
Coopers Fire	55
Dafo Fomtec	IBC
Dr Sthamer	13
DuPont Performance Chemicals	OBC
Dynax Corporation	51
Fire Fighting Enterprises	37
Firetrace International	42
HD FireProtect	55
Intersec	67
Janus Fire Systems	11
3M	31
New Age Industries	60
Nexans	7
Olympia Electronics	59
Patterson Pumps	18
Pentair Pumps	28
Pilkington	71
Reliable Fire Sprinkler (UK) Ltd	21
Siemens	45
Solberg	47
Specified Technologies Inc	40-41
TLX Technologies	37
Tyco Fire Protection Products	IFC
Underwriters Laboratories	22
Unifrax Corporation	77
Victaulic	33
Vimpex	71
Xtralis	34



"The independent alternative"

Foam Concentrates and Foam Systems

Visit us at Interschutz, Hall 013/Booth F20





Fire Fighting Foams & Equipment

Dafo Fomtec AB P.O. Box 683 SE-135 26 Tyresö Sweden
Phone: +46 8 506 405 66 Fax: +46 8 506 405 29
E-mail: info@fomtec.com Web: www.fomtec.com

When asset protection matters most. DuPont™ FM-200®.

DuPont™ FM-200® clean agent can reach extinguishing levels in 10 seconds or less, stopping ordinary combustible, electrical, and flammable liquid fires before they cause significant damage. When fire is extinguished that quickly, it means less damage, lower repair costs, and an extra margin of safety for employees and valuable assets—making it easier to keep your business running smoothly.

Make sure your business is protected with the most widely specified clean agent in the world. Get maximum protection with DuPont™ FM-200®.

1.800.473.7790
cleanagents.dupont.com



DuPont Fire Extinguishants. The Science of Protection.™



The miracles of science™

Copyright © 2013 DuPont. The DuPont Oval Logo, DuPont™, The miracles of science™, The Science of Protection™, and FM-200® are trademarks or registered trademarks of E.I. du Pont de Nemours and Company or its affiliates. All rights reserved.

IFP

INTERNATIONAL FIRE PROTECTION MAGAZINE

THE GLOBAL VOICE FOR PASSIVE AND ACTIVE FIRE PROTECTION


RE-HEALING FOAM
A11 REACTIVE EXPANDABLE

Issue 62 • June 2015
www.ifpmag.com

Reasons to choose SAPPHIRE...



...#2 where safety is a top priority



SAPPHIRE systems are ideal for use in occupied areas. SAPPHIRE uses 3M™ Novec™ 1230 Fire Protection Fluid which is very low in acute and chronic toxicity. When compared to other fire suppression agents, Novec 1230 offers the greatest margin of safety for regular Class A hazards between the design concentration of the agent (4.5% - 5.3%) and the No Observable Adverse Effect Level (10%).

With its international standards and meeting the requirements of approval agencies globally this is why SAPPHIRE 25 / 42 bar systems are ideal for use in occupied areas.

To find out how HYGOOD fire suppression products can help protect your business visit www.tfpemea.com

Or contact your local sales representative, call: 0161 2594 000



JUNE 2015 • ISSUE 62

Cover image: Residual fluorine-free foam clings to a fire training prop at an industrial firefighter school in Beaumont, Texas. Photo courtesy of The Solberg Company.

Publishers

David Staddon and Mark Seton

Contributing Editors

Marina C. Andersson, Camille Azzi, Jonathan Barnett, Steve Bond, Jamie Groves, Jeff Hebenstreit, John Kears, William E. Koffel, Rüdiger Kopp, Vicente Mans, Doug Marti, Phil Martin, Paul McGarry, Jim Pauley, Johan Post, Jonathan Rawlinson, Mark L. Robin, Fredrik Rosen, Markus Späni, Glynn Stainthorpe, Blair Stratton, Craig Voelkert, Neil Wallington, Duncan J. White.

Senior Design Manager

Richard Parsons
richard.parsons@mdmpublishing.com

Web and IT Manager

Neil Spinney
neil.spinney@mdmpublishing.com

IFP is published quarterly by:

MDM Publishing Ltd
The Abbey Manor Business Centre,
The Abbey, Preston Road,
Yeovil, Somerset. BA20 2EN. UK
Tel: +44 (0) 1935 426 428
Fax: +44 (0) 1935 426 926
Email: dave.staddon@mdmpublishing.com
Website: www.mdmpublishing.com

©All rights reserved

Annual subscription free of charge.
Register at www.mdmpublishing.com

ISSN – 1468-3873

DISCLAIMER: The views and opinions expressed in INTERNATIONAL FIRE PROTECTION are not necessarily those of MDM Publishing Ltd. The magazine and publishers are in no way responsible or legally liable for any errors or anomalies made within the editorial by our authors. All articles are protected by copyright and written permission must be sought from the publishers for reprinting or any form of duplication of any of the magazines content. Any queries should be addressed in writing to the publishers.

Reprints of articles are available on request. Prices on application to the Publishers.

Printed in the UK

PROUD TO SUPPORT



Contents

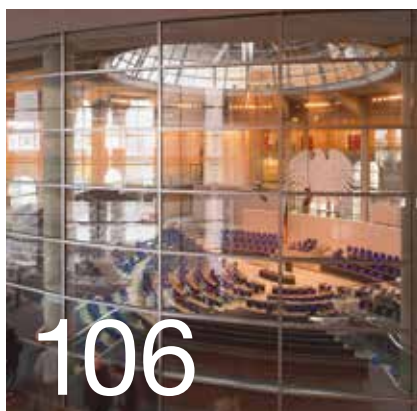
JUNE 2015

REGULARS

- 3 IFP Comment
- 5 NFPA Vision
- 6 News and Profiles

FEATURES

- 21 Summer Show Spectacular
- 42 The Importance of Listing Sprinkler Equipment
- 44 Life Safety and Fire Fighting Systems – The weakest link
- 48 A Lifetime of Safety
- 53 Demonstrating Installation Competence in Europe
- 57 Reducing Risk: Saving Lives and Assets
- 62 CE-marking of Cables – the Final Countdown has Started
- 66 Marine Applications of Clean Agents
- 72 Commercial Cooking Fire Suppression Systems
- 76 The Innovation of Fire Protection Equipment
- 80 BS 5839-1:2013 and BS 5839-6:2013 – What's changed?



- 85 A Safe and Pleasant Stay – Completely Protected from Fire
- 90 Securing Business Continuity in the Printing Industry
- 94 Focus on Cable Testing and Certification
- 99 Fire Engineering Versus Prescribed Fire Protection
- 102 Pedestrian Modelling in a Fire Environment
- 106 Fire-Resistant Glazing: An End to Design Compromises?
- 111 Candles to LEDs – the latest technology is improving safety
- 114 Fire Resistant Fixings
- 117 Inspection and Maintenance of Fire Protection Systems
- 120 Advertisers' Index

facebook

LinkedIn

twitter

Google+



EMERGENCY LIGHT TESTING SO EASY YOU CAN DO IT ON YOUR PHONE

THE EASIEST INSTALLATION

Lux Intelligent is the updated emergency lighting system from Advanced.

It saves money, time and makes it so easy to manage a compliant system, you can do it on your phone.

FORGET THE PANEL

Use existing wiring, or your LAN for a 'no wires' network. Unlimited, low-cost, any-time, networking of panels anywhere via LAN.

LOVES YOUR LIGHTS

Cloud monitoring and reporting of any system anywhere in the world, on your computer, phone or tablet. Live status report gives immediate indication of any issues.

NO LIMITS

Works with almost any light or luminaire, including LEDs. Easy conversion of existing lights.

SAVE TIME & MONEY

Works with any existing emergency lighting system including central battery.

PROOF

Cost and efficiency benefits with automated testing and reporting. One click sharing of maintenance or test reports right from your phone.

Full test history available any time. The easy way to demonstrate compliance to BS5266.



Tel: +44 (0)1670 707 111
Email: sales@luxintelligent.com
Web: www.luxintelligent.com

Contact us now for a demo

Fire Protection Challenges Amid the Megaprojects of the Gulf



Neil Wallington

FIFireE

Of all the regions in the world that appear to have a ever-growing stream of both public sector and private megaproject developments, the Gulf states must rank at the top of the list.

The Gulf region's building boom gained an impetus in 2014, when Dubai became the first Middle East country to be awarded the five-yearly global EXPO show to be held in the Emirate in 2020. This event will literally bring the world to Dubai's door during the three month long show. More evidence of the sheer scale of the Gulf's economic growth is one of the UAE's largest schemes, the Mohammed bin Rashid City, which will feature the world's largest shopping mall, a Universal Studios theme park and over 100 new hotels.

By this time Qatar had won the staging of the 2022 World Cup and was already busy with the construction of a plethora of new hotels and 10 huge football stadiums.

In addition, the US\$ 45 billion Lusair City project to create a coastal suburb for 200,000 inhabitants to the north of Doha gives an idea of the huge scale of such developments. Abu Dhabi and other UAE Emirates are all progressing new build projects including more very tall towers and shopping malls. Saudi Arabia's schemes include the US\$27 billion redevelopment of the Grand Mosque at Mecca and the creation of new economic cities throughout the kingdom. Similar schemes abound in Kuwait, Bahrain and Oman. Many of these projects involve groundbreaking and iconic design concepts.

Adding to all these structural developments is the US\$200 billion 2,177 km long Gulf Cooperation Council rail network project. When completed this will link all six GCC states by rail, and provide a direct alternative to air or sea travel for both the fast-expanding number of passengers and freight tonnages travelling across the region. Planned Gulf airport development and various new city Metro and tram links will all contribute to the demand for fire protection and safety strategies and products, not only to protect the public, but also the expected high volume of freight traffic, some of which will, no doubt, consist of flammable and hazardous products.

However, the region is not without its current fire protection challenges. A particularly serious one is the widespread use of aluminium composite cladding panels (ACPs) on the external faces of tall towers. The majority of Dubai's 250 high-rise towers utilise ACP's and four serious high-rise fires involving ACP's occurred in the UAE in 2012. These were at the Tamweel Tower and the Saif

Belhasa in Dubai, and two separate outbreaks in Sharjah's Al Baker and Al Tayer buildings.

The 2012 high-rise fires prompted the UAE Ministry of the Interior to introduce an extension to the Emirates Fire and Life Safety Code requiring new cladding for new buildings to adhere to the stringent new fire safety regulations and outlawing the foamed plastic insulation. Subsequently, in 2013 UAE Civil Defence announced an extension to the existing fire safety codes requiring owners of high-rise towers with flammable cladding panels to install a ring of fire retardant panels on every third floor to stop fire spread, together with external sprinklers.

Then on 21 February 2015 came another serious fire in a Dubai high-rise tower involving ACPs. The affected tower is somewhat ironically named the Torch, which at 352 metres consists of 86 floors with over 600 apartments, and is listed as the 10th tallest structure in the UAE.

The fire broke out at 0200 hrs on the 50th floor and like the other previous tall tower incidents, the ACP's spread the fire both up and down the structure, damaging 20 apartments. Thankfully, due to a rapid evacuation and prompt and professional operational action by Dubai Civil Defence firefighters, there were no fatalities amongst the Torch tower's 1,000 plus residents, although some suffered from smoke inhalation. There were also some minor casualties at street level as burning debris showered down into the street below.

ACP panels are generally either 4mm or 6mm thick, and have an aluminium skin of around 0.4mm on each side, and a core. Essentially there are two different types of core: HDPE (high density polythene) and a mineral core. HDPE is not easily ignited, but burns extremely aggressively; so much so that it burns downwards on a vertical wall almost as easily as it burns upwards. The mineral core material is either non-combustible, or has limited combustibility. For reasons unknown the non-combustible type did not make it to the local market until somewhat later than the HDPE type.

Fire is both man's oldest friend and enemy. It is unforgiving in its immediate threat to life and property, especially when the unrelenting clock ticks during the very early stages of a tall tower fire. As all the latest megaprojects get under way, the value of fire engineering that delivers effective and reliable fire protection is of absolute paramount importance to the safety of all those who will resort to the Gulf's ever-bigger showcase schemes.

Neil Wallington is a former British Chief Fire Officer, a Past International President of the Institution of Fire Engineers, and a holder of the Queen's Commendation for Brave Conduct. He is the author of 17 books on the work of the fire service, and acts as a consultant with extensive experience in the Gulf on a range of projects.

WHATEVER THE HAZARD, WE'VE GOT YOU COVERED



PRE-ENGINEERED SYSTEMS FOR SMALL SPACES:

- ✦ Detect and suppress fires automatically
- ✦ Reacts 10x faster than conventional systems
- ✦ Compatible with most extinguishing agents



Listings and approvals vary by agent and system type

ENGINEERED SYSTEMS FOR LARGE SPACES:

- ✦ High-pressure performance in a low pressure system
- ✦ Compatible with “clean” extinguishing agents
- ✦ Less piping and greater fill density

COME SEE US AT NFPA STAND 447 AND INTERSCHUTZ STAND C-26

LEARN MORE AT: www.firetrace.com

FIRETRACE INTERNATIONAL - WORLD HEADQUARTERS

8435 N. 90th St., Suite 2, Scottsdale, AZ 85258, USA.
Tel: +1 480 607 1218 • Email: info@firetrace.com

FIRETRACE INTERNATIONAL LTD - EMEA OFFICE

Unit 11, IO Centre, Salbrook Road, Salfords, Surrey, RH1 5DY, UK.
Tel: +44 (0) 1293 780 390 • Email: info@firetrace.com

Teaming Up

A Collective Approach to the Global Fire Problem

I recently returned from a trip to Hong Kong, where I had an opportunity to speak at Fire Asia, one of the premier fire safety events in the Asia Pacific region. I was struck by the event's theme – 'Team Up for the Future' – because of its simplicity as well as its importance. No one entity or group can solve the world's fire problem by itself – we need to team up in order to tackle the challenges of today.



Jim Pauley



**Jim Pauley is President
and CEO of the NFPA.**

NFPA has had a presence in the Asia Pacific region since the 1990s. NFPA is a well-respected and accepted brand for everyone I talked to while I was in Hong Kong: the engineering community, the firefighting community, and the fire prevention community. I found this same acceptance and recognition when I spoke at the Fire and Disaster Asia conference in Singapore last fall.

Two examples of NFPA's global reach are our standards related to transportation. NFPA 130, Fixed Guideway Transit and Passenger Rail Systems, and NFPA 502, Road Tunnels, Bridges, and Other Limited Access Highways, are frequently mentioned as key fire safety standards used across the globe to help ensure the safety of the traveling public. NFPA codes and standards are described as the primary reference when it comes to fire safety, and this impact stretches from NFPA 101®, Life Safety Code®, to NFPA 1, Fire Code, to NFPA 13, Installation of Sprinkler Systems, NFPA 70®, National Electrical Code®, and NFPA 72®, National Fire Alarm and Signaling Code.

But there is more to do, because the fire problem is a global one. From the Santika Club fire in Thailand, to the Comayagua prison fire in Honduras, to the República Cromañón club fire in Argentina and, most recently,

the Torch Tower high-rise fire in Dubai – we have work to do by providing up-to-date information and knowledge that can help all countries achieve an improved level of safety. We are also in a unique position to help. We can bring our 119 years of experience in fire safety to the table with the objective of accomplishing a single mission: improving fire safety for everyone.

Technology can help us do this much quicker. With our move to the fully electronic and online system of code development, more fire safety professionals from across the globe are able to participate in our standards process. Our online access to codes and digital resources can put life-saving information where it is needed in less time than it used to take.

We will continue to invest in expanding our impact around the world. With our well-respected brand and our position at the forefront of fire, life, and electrical safety, we can team up with countries across the globe to create a future that is safer from fire and related hazards.

The fire problem is a global one – we have work to do by providing up-to-date information and knowledge that can help all countries achieve an improved level of safety.



**For further information, go to
www.nfpa.org**

FFE's Light Cancellation Technology

FFE has been awarded a UK patent (Patent No. GB2513366) for its innovative new light cancellation technology for its Fireray range of infrared beam smoke detectors.

The technology works by actively monitoring ambient light levels on the detector and 'subtracting' them away from the 'real' signal. This allows the detector to work under the most difficult light conditions, including sunlight, sodium lamps and fluorescent lighting.

"It's no exaggeration to say that this technology is unique," comments FFE research engineer Dr. Daniel Waldron. "No-one else offers ambient light cancellation technology that allows the beam to cope with all manner of challenging light conditions, both natural and man-made. This means fewer false alarms and false readings."

"FFE is focussed on our customers and it is their needs that drive our innovation," adds managing director Mark Osborne. "Through our ongoing R&D programme we are developing world-leading technologies. I'm delighted with this patent as it demonstrates yet again our ability to understand and address the challenges faced in the fire industry on a daily basis."

By using infrared beams, Fireray beam detectors can identify smoke over much larger areas than traditional fire detection devices, making them perfectly suited for large indoor spaces such as warehouses, sports arenas and aircraft hangars. Usually wall-mounted at

near-ceiling level, they work by transmitting a beam of invisible infrared light across the building space to be protected. A receiver detects and measures the light and can recognise smoke interference anywhere along the beam path, triggering the alarm signal when the pre-determined threshold is reached.

 For more information, go to www.ffeuk.com



Wire-free 'listen and learn' fire safety innovation from Geofire

Visitors to fire technology specialist Geofire's FIREX International stand (E80) will be able to get a sneak preview of the latest addition to the highly successful Agrippa acoustic range – a new Agrippa Pillow Alarm.

The Agrippa 'listen and learn' technology, also available in the door holder and closer, is being used to alert deaf or hard of hearing people if the fire alarm sounds while they are sleeping.

The Agrippa Pillow Alarm is a battery powered, wire-free unit with a pad attachment that simply goes under a pillow. It uses 'listen and learn' digital wire-free technology that listens for the unique sound of a specific fire alarm. If the fire alarm sounds the pillow pad vibrates, high intensity LED lights flash and an LCD screen displays 'fire'. As it is compact and portable it can be moved around a building as required.

Features include:

- No installation.
- Technology ensures compliance with elements of the Equality Act 2010.
- LCD time and alarm clock includes flashing white LED visual warning.
- Complies with the highest European standards.

- Product design conserves battery power, with expected battery life of up to two years.
- Visual warning of low battery and radio signal fault.

 For more information, go to www.geofire.co.uk





IN OFFICES,
**FIRE SAFETY STARTS
WITH CABLES...**



NEXANS IS COMMITTED TO IMPROVING SAFETY IN BUILDINGS

When the protection of human life and sensitive electronic equipment is paramount, choosing the right materials is essential. As well as assuring the integrity of fire safety systems, installing Nexans' Alsecure range of cables limits the effects of toxic fumes and smoke, thus aiding the facilitation of effective escape for people from a fire situation and reducing collateral damage to expensive equipment.

www.nexans.com

 **exans**

Your expert in Fire Safety Cables

Advanced's MxPro 5 Multiprotocol Panel now Supports Nittan

Advanced's industry-leading multiprotocol fire panel, the MxPro 5 now has full, enhanced support across its entire range for the Nittan Evolution protocol.

This partnership offers major advantages to fire professionals, including faster loop polling, intelligent isolators reported on the panel and support for the latest Nittan devices. The change covers the entire MxPro 5 range in one, two, four or eight loop formats, with up to 254 devices per loop.

Features of the analogue addressable MxPro 5 include Advanced's renowned networking capabilities, which allow up to 200 panels to be quickly and easily connected in radial or fault-tolerant networks. The Nittan supported panels also use Advanced's easy to use Dynamix Tools config and service software, making even the largest of sites, with complicated cause-and effect, easy to programme and maintain. All MxPro 5 panels also support Advanced's leading AlarmCalm false alarm management solution.

"Our enhanced support for the Evolution protocol adds real value for Advanced and Nittan customers," comments Advanced's marketing manager Aston Bowles. "Our fire panels are well known for their leading

quality and performance and the choice available to customers has taken another step forward."

The result of decades of research and development involving installers, specifiers and end users across the world, the MxPro 5 range is designed to offer more power and performance in a user-friendly format. It supports protocols from four of the world's leading detector manufacturers: Apollo, Argus, Hochiki and Nittan and is approved to EN54 parts 2, 4 and 13. It is one of the few EN54 Part 13 approved panels available.

The Evolution range is the latest advanced, premium fire system developed by Nittan. It uses ASIC technology in the sensors and sophisticated detection algorithms, combining extremely reliable fire detection together with a very high degree of protection against unwanted false alarms. Its advanced, highly flexible protocol is not only uniquely resistant to noise, but also allows for substantial amounts of information to be transmitted at high speed.

Lee James, Nittan's Europe's general manager for sales and marketing, said: "The Evolution protocol and detector range offer a great many advantages. To truly benefit, customers need to

team the detectors with an equally high quality panel range, such as Advanced's MxPro 5. We're delighted to be continuing our relationship with one of the highest quality intelligent panel businesses in the market."

Advanced is a world leader in the development and manufacture of intelligent fire systems. The legendary performance, quality and ease-of-use of its products sees them used in prestigious and challenging locations all over the world, from single panel installations to large multi-site networks. Advanced products include complete fire detection systems, multi-protocol fire panels, extinguishing control and fire paging systems.

 **For more information, go to**
www.advancedco.com



IWMA publishes position paper on Third Party Inspection

The International Water Mist Association (IWMA) has published a position paper on 3rd Party Inspection and it is the second position paper on the IWMA webpage. The first one dealt with the design and installation of water mist systems and the second position paper is a logical consequence of the first one.

"It was high time to deal with this topic", says Bettina McDowell, association secretary, and continues: "A third party inspection will ensure

the proper performance of a water mist system giving all parties involved peace of mind."

The position paper can be downloaded from the IWMA homepage at www.iwma.net.

To develop the new IWMA position paper different groups within the organisation worked together. After the IWMA scientific council had been given the task to draw up a first draft, the IWMA members had the chance to hand in

comments. These were then incorporated into the first draft which has eventually has become the final version.

 **For more information, go to**
www.iwma.net



New Sport's Bar Protected by Fike Fire Detection



Corey's Sports Bar (pictured right), a newly refurbished nightspot in Tamworth, UK, has invested in a fire detection solution from Fike Safety Technology (FST). Located in the town centre, the new bar opened at the end of 2014 and offers local residents the latest sports, music, entertainment and food – 7 days a week. FST approved systems integrator, Justice Fire & Security, designed and installed a solution based on the company's popular Duonet single-loop intelligent addressable fire alarm system.

"The innovative technology built into the Duonet panel is designed to significantly reduce false alarms and provide the flexibility required for demanding environments such as nightclubs" explained, Steve Grant, Installations Manager of Justice Fire & Security. "This flexibility combined with the benefits of FST's multi-criteria detectors made Duonet an obvious choice for this project."

Forty devices including Multipoint ASD detectors, call points, sounders and beacons, were installed in the bar – up to 200 devices can be installed on a single loop. The Multipoint ASD detector provides high performance and flexibility through multiple choices of detection mode,

combined with an optional built-in 90dBA sounder and strobe. The unit can be set to a single mode or a combination, for a choice of up to 15 different settings. Each detector also has an in-built loop isolator as well as optional I/O for local control and switching. This single device can be used in all fire detection applications simply by changing its mode of operation. For example, the detectors protecting the dance floor have been programmed to a heat mode as the bar uses a smoke machine for effects. This flexibility also allows the system to be easily re-configured if the layout of the venue changes at any time in the future.

"As a system designer and installer the flexibility of the Multipoint ASD Detectors is a great advantage. We only have to stock a couple of different versions of detector and they can easily be re-programmed on site if we come across any problems during commissioning", added Steve.

To aid evacuation in the event of fire, standalone strobes were installed in the toilets as well as on detectors on the dance floor. The use of integral strobes eliminates the need to install a separate strobe and therefore saves time and

money. Loop mounted I/O modules were used to automatically turn off the sound system and turn on the lighting if an alarm is triggered.

The Duonet panel provides up to 2-loops, whereas Quadnet, its larger brother, has a capacity of up to 4 loops making addressable Multipoint ASD detector technology available to customers with systems of up to 800 devices. The standard black high-gloss finish of the panels not only reflects its state-of-the-art technology, but also enhances its surroundings – rather than be hidden away as is often the need with traditional fire alarm control panels. Duonet's design, performance and flexibility appeals to consultants, end-users, installers and engineers alike.



For more information, go to
www.fikesafetytech.co.uk

Honeywell CO detector saves widow's life

A Widow's life was saved by the carbon monoxide alarm she fitted in her home. Margie Cosker is a 68-year-old widow who lives alone in a cottage in a Devon village. One Saturday evening the carbon monoxide alarm in her sitting room started sounding.

Investigations by two gas engineers failed to detect the source of the deadly

gas until it was found to be a bucket containing ashes emptied from a multi-fuel burner in the sitting room.

"The gas engineer had no doubt that the carbon monoxide alarm had saved my life," said Margie. "The bucket of ash that was the source of the problem practically exploded when he took it outside and

poured water on it. Although I knew that carbon monoxide is colourless and has no smell, I had not realised how easily generated it is. Without the alarm I would not be here to tell the tale."

Margie borrowed another detector from a neighbour's, however this failed to detect the source of the carbon monoxide in her home. Prior to the discovery of the ash bucket one of the gas engineers was on the point of calling the fire service because he had not been able to identify the source of the carbon monoxide leak from the domestic appliances.



For more information, go to
www.homesafety.honeywell.com

New compact D2x explosion proof horn sounders and beacon units from E2S

The new D2x family from E2S Warning Signals, the world's largest independent warning device manufacturer, is based on a high output 116 dB(A) SPL 64-tone 4-stage horn sounder, which can be combined with a powerful 5 or 10 Joule Xenon strobe in a compact 130 mm wide, 125 mm deep die-cast marine grade aluminium housing. Designed for use in Zone 2, 22 and Division 2 hazardous locations, the D2x is a truly global product range, with multiple approvals permitting use in regions covered by IECEx, ATEX, NEC and CEC regulations.

With four remotely triggered alarm stages the D2x can signal multiple safety warnings or process events. In the combined units, the Xenon strobe beacon and the alarm horn sounder can be activated individually via separate terminations or linked for simultaneous operation from a common power supply.

The horns offer 64 internationally and nationally recognised alarm tones plus continuous, intermittent, sweeping and alternating tones with an effective range of up to 125m (410ft); multi-sounder systems are automatic synchronised. In combined audible/visible units the polycarbonate beacon lenses are user-changeable, with a choice of Amber, Blue, Clear, Green, Magenta, Red and Yellow colours.

The corrosion proof, marine grade aluminium die cast enclosure, available in either red or grey, is phosphated and powder coated with an ingress protection level of IP66 and NEMA Type 4/4X/3R and 13, ensuring resilience in the harshest of environments. Dual cable entries and

duplicated cable termination provide the facility to loop in and out; minimising installation time and cost. For maximum compatibility, the devices can be powered from 24 or 48 VDC or 115 or 230 VAC.

 For more information, go to www.e2s.com



AkzoNobel launches reduced-weight Chartek passive fire protection

AKZONOBEL has launched a new Chartek® passive fire protection product aimed at the offshore oil and gas industry. Chartek 8E provides a significant reduction in applied weight, addressing a key customer need and resulting in a more sustainable passive fire protection offer.

"We know that applied weight is a key concern for our customers and the

industry, so we set out to develop a lightweight solution that delivered this benefit alongside both 60 minute jet and pool fire ratings," said Ian Fletcher, Oil and Gas Segment Manager at AkzoNobel's Protective Coatings business.

Chartek 8E, based on a proven in-service technology, is optimized to provide 60 minutes resistance to the effects of hydrocarbon pool fires without the use of mesh; a 60-minute resistance to jet fires can also be achieved through the use of mesh reinforcement.

"An intensive R&D program has enabled us to optimize char expansion technology with and without mesh reinforcement during jet and pool fire exposure," Fletcher added. "This means we are more equipped than ever to offer our customers the full choice of passive fire protection, whatever their needs."

Commenting on the announcement,

Mauricio Bannwart, Managing Director of AkzoNobel's Protective Coatings business said: "The Chartek range has been a leader in the passive fire protection market for over 40 years. These latest enhancements clearly focus on our customers' needs and coupled with our industry-leading fire design service, will help maintain the position of Chartek as the market's leading passive fire protection solution. Chartek 8E is the first step in our development of a range of new passive fire protection products."

Since its first introduction in the 1970s, Chartek technology has gone on to be used by all of the world's oil majors and has been proven in-service in regions as diverse as the North Sea, the Arctic and the tropics.

 For more information, go to www.akzonobel.com



First BM TRADA Q-Mark certification for Fire Stopping Installation

BM TRADA is pleased to announce Panache Fire Services Ltd as the first company to achieve certification under its Q-Mark Fire Stopping Installation scheme.

The recently introduced scheme, aims to ensure that fire stopping solutions are being fitted correctly and to verify the competence of installation companies, while offering building owners and Responsible Persons with a certificate of installation.

▼ **BM TRADA Business Development Manager**
Simon Beer with Nick Williams Operations
Manager, Panache Fire Services Ltd.



To achieve certification under the scheme, Panache Fire Services Ltd had to nominate a number of supervisors and demonstrate their competence to fit fire stopping products and supervise the fitting of such products.

Each nominated supervisor was required to attend BM TRADA's Fire Protection in Buildings Explained seminar; complete the scheme-specific training, which includes an examination; and pass an on-site competence assessment at a live customer site. BM TRADA also conducted an inspection of work carried out by each supervisor and those under their supervision at a live customer site.

Following certification, each installer is required to notify details of all installations to BM TRADA through its web-based database and to place a label next to each installation to confirm that it meets the requirements of the scheme.

Once this has been completed, BM TRADA will email a certificate to the person nominated by the installer, confirming details of what has been installed. This certificate can be retained by the building owner to help demonstrate that they have had their compartment lines appropriately fire stopped. It can also be used to assist with meeting the requirements of Regulation 38 of the Building Regulations.

Certification under the scheme is valid

for three years and is maintained through a programme of annual surveillance audits and a recertification audit in the third year before the certification expires.

Panache Fire Services Ltd Business Development and Marketing Manager Jessica Williams declares:

"Panache Fire Services Ltd is pleased to be the first company to have achieved certification under BM TRADA's Q-Mark scheme for Fire Stopping Installation. We are determined to improve installation standards throughout the construction process and the scheme offers us an opportunity to demonstrate our skills and expertise in this area and to provide our customers with all the assurances they need."

BM TRADA Business Development Manager Simon Beer states:

"Third party certification plays an important role in assuring the quality of products and of providing confidence to building owners, specifiers and Responsible Persons that appropriate products have been correctly installed."

"BM TRADA's Q-Mark scheme for Fire Stopping Installation provides an essential means of verifying the competence of companies who are installing the fire-stopping and of certifying each installation."



For more information, go to
www.bmtrada.com

C-TEC launches free CAD downloads

C-TEC has released its first batch of specifier-friendly CAD drawings. Industry standard DWG files of the company's SigTEL disabled refuge system, NC951 disabled persons' toilet alarm and 800 Series conventional call system can now be downloaded free.

Andy Green, C-TEC's Marketing Manager said, "We've created these CAD drawings so architects and engineers can incorporate them easily into their project designs."

CAD drawings of our fire alarm control panels, addressable call systems, detectors, visual alarm devices, power supplies and induction loop amplifiers will be released later on this year."



For more information, go to
www.fastrackcad.com



SIMPLICITY



The user-friendly dosing system for fire-fighting
- easy to install, use, maintain and test.



FIREMIKS[®]

THE SWEDISH ORIGINAL



Visit us at INTERSCHUTZ 2015, 8-13 June, Hall 13, Stand F 30



Pyroguard First in Fire Glass

Pyroguard's core purpose is to make buildings safe, enabling the contractor to deliver the architect's vision. Glass remains a preferred material to work with from an aesthetic perspective and Pyroguard enables industry professionals meet all their fire safety glazing requirements via a single source.

The company was formed in 1988 with an initial production focus on wired glass. Over time, as a result of in-depth research and testing, this developed into the clear fire resistant glass that now encapsulates the Pyroguard range.

The UK facility is now located in Haydock after a move from Warrington in 2002. In 2012 the company acquired a French manufacturer of fire resistant glass and now also operates from a base in Seingbouse, in the east of France. This facility boasts state of the art equipment with an on-site fire testing laboratory to assist the team in pushing innovation in the field of high performing, aesthetically stunning fire glass solutions through research and development.

Pyroguard's fire glass is available in three main classifications known as E, EW and EI. The company also produces a toughened form of fire resistant glass, the Pyroguard T range, designed to withstand from three to five more times more pressure than average heat-resistant



glazing. This is ideal for buildings in which sheet glass is a key structural component.

Pyroguard's fire glass not only protects against fire but optimum acoustic control is also provided as a result of the resin and gel interlayers within the glass, helping to minimise intrusive urban sound pollution, ambient noise and reverberation whilst allowing plentiful natural light to enter.

To reflect increasing environmental concerns Pyroguard ensures its glass has high levels of insulation that reduce energy expenditure and overall carbon footprints.

Demand for such high specification fire glass is such that the initial markets

Pyroguard targeted within the UK, Ireland and the Netherlands has expanded, with the company now reaching customers directly, and via suppliers, in France, Germany and Scandinavia.

One of Pyroguard's key goals is to continue to expand these territories and supply complete fire glass solutions to specifiers across Europe. To achieve this, the company has made large investments in technical support.

Its technical advisor teams boasts members with the knowledge to give quality and accurate advice to customers about Pyroguard's glazing systems and also regarding the legislation regulating them and the types of framing applications in which they can be used.

Pyroguard remains proud of its flexibility and responsiveness, with its locations and processes enabling the shortest possible lead times without any sacrifice of quality.

Irrespective of any changes and developments that may lie ahead, Pyroguard is committed to remaining First in Fire Glass- better, quicker and more responsive. As a service orientated company, it continues to raise the bar for industry standards, delivering exceptional sales and service which better meet the needs of their valued customers.

 For further information, go to www.pyroguard.eu



Images courtesy of Pyroguard

WAGNER Group GmbH

Comprehensive Fire Protection for Britain's Written Treasures

Nitrogen secures millions of books and magazines inside the British Library

The British Library is home of some of the greatest written treasures in the world: the Magna Carta, Leonardo da Vinci's Notebook and the Gutenberg Bible. They are not only of significant importance for our history, but they are all stored in the national library of the United Kingdom, one of the largest libraries in the world. It is responsible for the safekeeping of more than 150 million items in about 400 different languages including books, maps, newspapers, magazines, prints, drawings and many more. More than seven million items are stored at the Document Storage Centre in Boston Spa, West Yorkshire. To meet the ever-increasing storage requirements, the centre was extended in 2008 with the Additional Storage Program and in 2014 with the Newspaper Storage Building. Due to this fact the British Library trusts WAGNER's technology to actively protect the millions of copies of newspapers and books from fire and its destructive side effects.

Active fire prevention for 100 km shelving full of books and magazines

Generally, the fire risk inside both storages, ASP and NSB, is normally low. Books and newspapers cannot ignite themselves. Therefore the fire risk is limited to the

electrical machinery and equipment inside the storage.

The Additional Storage Program Building (ASP) contains more than 100 km of 25m high shelving where about 140,000 bar-coded plastic containers are stored and is split into two storage areas of 35,000 and 50,000 m³. Since its opening, the Program is protected by WAGNER's active fire prevention technology OxyReduct®. It reduces the oxygen content inside the automated high-bay storage by continuously introducing nitrogen to both areas. The N₂ is generated by a so-called membrane system and distributed through a pipe system. The oxygen concentration is constantly lowered to between 14.8-15 vol% thus creating an extremely fire retardant atmosphere.

British Library and WAGNER, a good liaison

For the new built Newspaper Storage Building British Library chose to deploy the OxyReduct® active fire prevention system. "After having had a good experience with this system, we again chose WAGNER," Patrick Dixon, Head of Engineering and Construction British Library, said. To ensure for the very best conditions for active fire protection the archive was built according to WAGNER's recommendations to the airtightness of the building. This high density solution, normally used in warehouses

but rarely in archives, was ideal for a high standard fire protection system demanded by the British Library.

OxyReduct® VPSA: Cost efficient and highly effective

Latest technology in form of VPSA OxyReduct® now protects the Newspaper Storage Building. The required nitrogen for reducing the oxygen level is produced directly on-site from the ambient air by generators with the latest Vacuum Pressure Swing Adsorption (VPSA) technology. This system can generate energy savings of up to 80% compared to conventional membrane systems like in the ASP Building. Therefore OxyReduct® VPSA can be considered as particularly energy-efficient and environmentally friendly as it reduces the running costs for the British Library. Like in the ASP building the oxygen level is constantly being kept between 14.8 and 15 vol% remaining accessible for authorised staff. In such an atmosphere stored combustibles do not inflame and open fire is impossible.

TITANUS PRO-SENS® air sampling smoke detection systems were integrated into the fire protection design of both buildings ASP and NSB. In an event of fire the TITANUS® units recognise quickly and reliably even the smallest pyrolysis particles as it actively takes samples from the ambient air. The risk management system VisuLAN® links both fire protection systems together, thus all relevant information can be monitored at a central location and appropriate actions can be initiated.

Conclusion

The combination of active fire prevention, fire detection and risk management eliminates the risk of fire for both archives as far as possible and provides the most effective protection to the written treasures of the United Kingdom.



For further information, go to
www.wagner.de



Image courtesy of WAGNER Group GmbH



**WE ARE CLEARLY FOCUSED ON YOUR
ABILITY TO DELIVER RELIABLY.**

Intelligent fire protection solutions for stores and logistics.

Even small fires can cause major damage to your valuable goods. We have a solution for you: The ASD TITANUS®-technology is false alarm immune and recognizes a fire in its earliest development, thus being around 2,000 times more sensitive than a conventional fire detector! TITANUS® in combination with the active fire prevention system OxyReduct® will reduce the chance of a fire to an absolute minimum and you remain operational, guaranteed. For more information visit www.wagner.eu/logistics.

WAGNER sets standards for innovative and comprehensive solutions in fire protection:
With TITANUS® for earliest fire detection, FirExting® for fire-extinguishing, with OxyReduct® to actively prevent fires from breaking out and VisuLAN® for hazard management.

Fireblitz Extinguisher Ltd.

Setting the Standards for Fire Safety Products

FIREBLITZ EXTINGUISHER LTD. are a leading manufacturer of fire safety products including the Fireblitz brand of fire extinguishers and the Firehawk brand of smoke, heat and carbon monoxide alarms along with associated specialist alarms for the hard of hearing, physically impaired, vulnerable and elderly.

The company was started in 2008 following the coming together of very experienced people from the extinguisher and alarm markets. The company first designed and produced the fire extinguisher products and then in 2010 added the Firehawk brand of alarms.

Fireblitz is a fully accredited ISO9001 company and are considerate and caring to the environment. All products, where applicable, are approved to the relevant standard governing that product. The company is based in Erith, Kent, UK but supply products throughout the UK and Europe as well as the Middle East, Africa and North and South America and Australasia.

Extinguishers

The Fireblitz range of fire extinguishers extends from small aerosol type and dry powder to foam, water and CO2. The company are also the leading supplier of automatic extinguishers to the Marine industry with powder and gas versions as well as many other sectors. Products are also branded for other organisations such as the AA, Britannia Fire, Firemaster Japan and others including car manufacturers and distributors. The specialist range of 'Public Order' fire extinguishers are supplied to many UK Police Authorities for use in riot control through a National Framework agreement and are also listed on The Consortiums framework agreement for Fire Extinguishers.

Firehawk Alarms

The Firehawk alarm range has been designed and developed with over 80 years of combined experience in the sector and the products were designed with the customers and end users in mind. They are user friendly, easy and quick to install and above all built with quality and best value in mind. The Optical (Photoelectric) Smoke alarms come with Thermal Stability Enhancement technology (TSE) which is designed to reduce nuisance alarms whilst maximising the detection of smoke and heat across a range of environmental conditions. Components and batteries used in the Firehawk range are top quality and by leading brands.

The alarms include the FHB10, long life (10 year) fully sealed battery optical smoke alarm and also heat alarm (FHH10) and are now chosen as the product of choice by many UK Fire and Rescue Services (FRS).



Mains Smoke (FH250) and Heat alarms (FH450) come in the form of battery back-up (BB) or rechargeable lithium cell back up (RB) and offer the installer quicker fitting times due to the 'Fast fix' style and push fit terminals and the end user benefits from a quality, reliable product protecting them.

Firehawk carbon monoxide alarms are all fully sealed to offer tamperproof products and come with a versatile mounting system allowing them to be freestanding or wall / ceiling mounted.

Firehawk are proud to supply many FRS including North Wales, South Wales, Mid and West Wales, Devon and Somerset, Wiltshire, Gloucestershire, Tyne and Wear and the Scottish FRS. The alarms were chosen by these FRS due to the Firehawk FHB10 alarm's proven quality and value for money. The company's wide range of products can be found listed for public authorities in the UK under the 'Consortium and Yorkshire Purchasing Organisation's (YPO) framework agreements for the 'Supply of smoke alarms and associated products.'



Images courtesy of Fireblitz Extinguisher Ltd

 For further information, go to www.fireblitz.co.uk



Chosen and fitted
by specifiers and
contractors worldwide

**NEW
EXCITING
PRODUCTS FOR
2015**
CONTACT US
FOR DETAILS



**MAINS POWERED
SMOKE AND HEAT ALARMS**



**BATTERY OPERATED
CARBON MONOXIDE ALARMS**

To view the FireHawk battery and mains powered alarms
and our range of extinguishers please visit fireblitz.co.uk



D-Line

Safely Retaining Cable in Future Fires

Firefighters enter buildings on fire to save life and minimise property damage. They work in intense heat and thick/toxic smoke with very poor visibility. To do this, they wear breathing apparatus and fire resistant clothing for protection.

The problem has been that many types of wiring system have fallen from walls and ceilings at the early stages of a fire leaving cables hanging. These cables have become entangled around the firefighters' breathing apparatus and/or uniform leaving them trapped and running out of air. This directly caused the deaths of 8 firefighters in the UK between 2005 and 2010.

The evidence from these tragic events has helped to drive a change in legislation.

In January 2015, the Institution of Engineering and Technology published the 3rd amendment to the 17th Edition (BS7671). It states in Chapter 52 (Selection and Erection of Wiring Systems) under section 521.11 that "Wiring systems in escape routes shall be supported in such a way that they will not be liable to premature collapse in the event of fire." This becomes mandatory for all non-domestic installations from 1st July 2015.

In Note 1, there is particular reference to failure of non-metallic trunking leading to cables hanging across access/egress routes hindering evacuation/fire-fighting activities.

In Note 2 it specifically states this precludes the use of non-metallic clips, cable ties or trunking as the sole means of support. For example, where a non-metallic cable trunking is used, a suitable fire-resistant means of support/retention must be provided to prevent cables falling in the event of fire.

Designers and installers will now have to use non-combustible methods of cable containment and restraint for all cable types (including mains power/switching, data, telecoms, coaxial and TV) in any and all areas of a building that can be considered an escape route. This might include general office/retail space as well as the usual corridors, stairwells, service corridors etc. that typically form part of an escape route. This applies within the UK at present – but fire strikes anywhere, so how are you going to retain cables in future?

The widely used Safe-D clip range manufactured by D-Line (Europe) Limited has been tested by Exova Warrington Fire, confirming compliance to BS5839 part 1 section 26.2e – resistance to fire with mechanical shock and resistance to fire with mechanical shock and water spray – both for 120 minutes. The tests confirmed that Safe-D clips, when containing Enhanced Fire Performance 1.5mm



2 core cables, and subjected to 930°C (+40 -0°C) for 120 minutes at a voltage of 500V rms, enabled the cables to maintain circuit integrity. This is the highest requirement any cable type is liable to ever need, thus more than sufficient for all other cable categories.

Safe-D Clips are manufactured from high temperature steel with a gold passivated finish that withstands mild corrosive elements – in ceiling voids for example. Once fastened directly onto the building structure or fixed within plastic trunking (from 25x16 to 50x50mm), pliable tabs on the Safe-D clip are easily folded to secure two or more cables. Fixing time is at least halved as one Safe-D clip fits 2 or more cables compared to fixing one cable by each P-clip.

The clips comply with BS5266 for installation of emergency lighting – especially in retrospective works that become necessary following reassessment of installations carried out to a previous version/standard.

Given that installation time using these simple, inexpensive clips can be reduced using careful planning, isn't it worth applying them to all future electrical design plans where appropriate to greatly minimise the risk of fallen cables and the possible consequences in future?



Images courtesy of D-Line



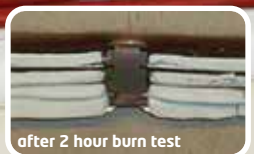
For further information, go to
www.d-line-it.co.uk

D-LINE

Safe-D® Clips



4 new enhanced FP cables



after 2 hour burn test

Secures cables at 930°C (+40°C -0°C) for at least 2 hours



Safe-D® Clips are quickest and easiest to install and are fully certified to satisfy legislative requirements to secure all surface cables in escape routes. When used with appropriate fixings they can securely hold bundles of cables on a surface at 930°C (+40°C -0°C) for at least 2 hours.



All Safe-D® Clips are suitable for direct to surface fitting



Safe-D40 in dado trunking



Safe-D® Clips fit traditional PVC Trunkings (from 25x16mm upto 50x50mm profiles)

Available from most leading electrical trade counters

Tel: +44 (0)191 236 0960

www.d-line-it.co.uk

enquiries@d-line-it.com

JANUS
FIRE SYSTEMS®

SPECIAL HAZARD FIRE PROTECTION SOLUTIONS THAT REDUCE DOWNTIME, IMPROVING BUSINESS CONTINUITY.

With a global team of trained distributors ready to evaluate, design, install & service our systems.



JANUS
FIRE SYSTEMS®

Join the Conversation
INTERSCHUTZ 2015 - Hall 13 Booth #D02
NFPA CONFERENCE AND EXPO 2015 - Booth #1032

1102 Rupcich Dr, Crown Point, IN 46307

+1 219-663-1600 · www.janusfiresystems.com



Ready in an instant. ALWAYS.

It only takes a spark. In less than a minute, an uneventful day can turn into an unbelievable nightmare.

But with Sentinel™ Series fire suppression pumps, your front line defense responds instantly...every time.

SENTINEL™ SERIES FIRE SUPPRESSION SYSTEMS

- Horizontal Split Case Pumps
- Vertical In-Line Pumps
- Vertical Turbine Pumps
- End Suction Pumps
- Pre-Pac® custom-engineered pre-packaged systems.
- Reliable performance
- Unmatched durability
- World-class engineering expertise

EN12845 FIRE PROTECTION EQUIPMENT FOR EUROPE

Patterson Pump Ireland Ltd. strives to provide a quality, reliable fire protection system, at the most competitive price. Patterson systems comply with the EN12845 standard and other local rules for the design, installation and maintenance of automatic sprinkler systems.

When every second counts. Sentinel's response is just a second away.



A Subsidiary of Patterson Pump Company U.S.A.
Patterson
PUMP IRELAND LIMITED

PATTERSON PUMP IRELAND LIMITED
A Subsidiary of Patterson Pump Company U.S.A.
Tel.: 353 44 934 7078

E-mail: info@ie.pattersonpumps.com
www.ie.pattersonpumps.com

PATTERSON PUMP COMPANY
A Gorman-Rupp Company
Tel.: (706) 886-2101

E-mail: marketing@pattersonpumps.com
www.pattersonpumps.com



SUMMER SHOW SPECTACULAR

June 2015 sees an incredible summer fire trade show spectacular with three of the world's premier fire events taking place in the same month. Starting in Hannover, Germany is the world's largest and most famous fire show Interschutz. Next up is London, England for Firex International and finally to Chicago, USA for the NFPA Show. IFP magazine will be distributed at all three events with this special edition. To mark this once in every five year occurrence, the following Showcase highlights a selection of the industry's leading companies.



Interschutz
8th-13th June 2015
Hannover, Germany



Firex International
16th-18th June 2015
London, UK



NFPA
22nd-24th June 2015
Chicago, USA

UL

UL is a premier global independent safety science company with over 120 years of expertise in verification, testing and certification. It has more than 10,000 professionals who are guided by the UL mission to promote safe working and living environments for all people.

Delivering market access solutions for Europe, the Middle East and the Americas, UL offers the highest level of regulatory acceptance market recognition for the building and life safety technology sectors which include security, fire suppression, personal protection equipment and more. UL works with manufacturers, designers, architects, trade associations and international regulatory authorities to bring solutions to a complex global supply chain.

UL utilizes research and standards to continually meet ever-evolving safety needs, as well as to cultivate new certification programs and aid in the development of critical codes that will address emerging risks and innovation within the life safety and security industry.

We offer technical engineering support services, factory capability assessments, quality assurance, regulatory compliance testing, and sustainability and environmental certifications.

 For more information, go to www.UL.com



TLX Technologies



TLX Technologies, Inc. is proud to introduce an actuator for fire suppression systems with active installation supervision. The durable actuator is compliant with NFPA 2001, Sec. 4.3.4.1, which will be required on all clean-agent fire extinguishing systems by January 1, 2016.

The new UL recognized component allows for fully engaged installation detection to be configured to your exact needs. Rugged construction, ultra-fast response and the ability to be reset, ensures consistent performance over the solenoid's entire 15-year life span. In addition, TLX can adapt the supervision capabilities to a pneumatic actuator for slave cylinders.

For nearly 15 years, TLX Technologies has worked with manufacturers to develop and manufacture custom actuators and valves to meet the challenging demands of active fire suppression systems.

Please visit us at Interschutz 2015 in Hall 013, Booth D51 and at the 2015 NFPA Conference and Expo on Booth 119

 For more information, go to www.tlxtech.com



FIREX International

Turns up the heat as it returns to London's ExCeL this June

From June 16th – 18th this year the Fire Industry will once again gather in London to participate in FIREX International, the annual industry event that connects the global security and fire markets.

FIREX International is co-located alongside IFSEC International which re-unites the fire and security industries in one location. There are increasing opportunities and convergences within both sectors so this seamless blend will create three days of focused attention on life safety and property protection.

Both FIREX and IFSEC welcome a formidable range of world leading manufacturers and service providers, which makes the breadth of expertise and solutions on offer unmissable for fire and security professionals. With a major focus on innovation and products, the events provide complete snapshots of what's currently available and an intriguing view to future product developments.

With over 100 suppliers working within the fire sector currently confirmed to participate, FIREX International will showcase all the latest technology, solutions and knowledge. A highlight this year will be the BM TRADA stand, a leading provider of independent testing and approvals services, who will showcase the benefits of effective passive fire protection through a range of interactive exhibits, live demonstrations and free seminars.

On the first day of FIREX International BM TRADA will conduct a live fire door test from their fire testing facility in High Wycombe that will be streamed directly to the FIREX Expertise & Guidance Theatre, this powerful demonstration will show two identical doors subjected to a prolonged period of fire, one

of the doors will have been correctly specified and installed, while the other will demonstrate many of the common mistakes made.

Another exciting feature to return is the Innovation trail; organisers of FIREX International polled the industry to discover all the latest trends and innovations that will be on display across the show floor. The Innovation Trail will allow visitors to navigate all the newest products and services from across the fire safety industry that have launched this year in an easy to follow format, each stand that has something new to showcase will be included and highlighted to visitors.

Visitors will also be able to speak to leading suppliers that are shaking up the industry with new services, experts will be on hand to answer any questions and demo all the latest products on their stands.

New for 2015, FIREX International launches its Inspirational Speaker Series with three high-profile personalities covering the sports, business and extreme adventure worlds, all have reached the pinnacle of their careers and will share their expertise and unique experiences with our audience.

In its inaugural year the Inspirational Speaker Series will host leading businesswoman Baroness Karren Brady CBE, the world's greatest explorer Sir Ranulph Fiennes OBE and Britain's greatest Olympian Sir Chris Hoy MBE across the three days.

The Expertise & Guidance Theatre will cover key topics including Fire Doors, Smart Hotel Solutions, IP Systems and Fire Risk Management, amongst others. Highlights include Nick Coombe, Fire Safety Regulation Manager at London Fire Brigade who will run a session on 'Enforcement and the Fire Safety Order – is it working?' exploring the lessons learned from 10 years on and also



asking if there needs to be any changes made to this going forward. Additionally, Lance Ruetimann, Senior Manager Industry Affairs within the Building Technologies Division at Siemens Switzerland will look at 'Evolving Fire Safety towards Holistic Safety', discussing fire safety and the convergence of other safety measures along with the importance of evolving fire detection and alarm systems into danger detection and management systems.

Other exciting features at this year's FIREX International include the LPCB (Loss Prevention Certification Board) Red Book Pavilion; visitors to the show can access information free of charge about products and services that have certification from this highly reputable certification provider.

Returning after a successful launch in 2014 is Security & Fire Installer Live, where experts will be on hand to present live demos and test the kit to the extreme so visitors can see for themselves the limits products can be pushed to.

FIREX International will be presented as part of UBM EMEA's Protection & Management Series. The Protection & Management Series encompasses five major shows in related marketplaces covering safety, service management, facilities, security and fire, the overall ethos of the series is about protecting and managing buildings and places of work, along with the people and information within those places of work.

 **For more information, go to**
www.firex.co.uk



Zapp-Zimmermann

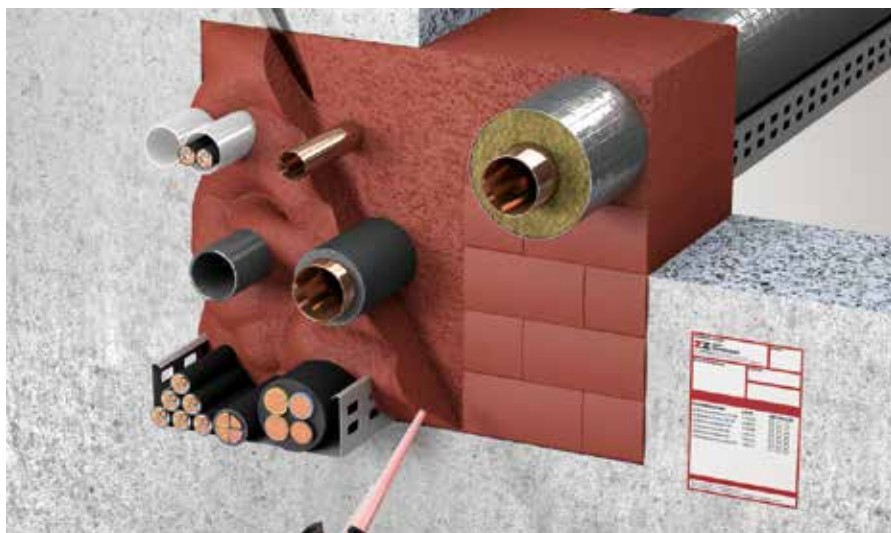
ZAPP-ZIMMERMANN has been offering innovative fire safety systems for more than 20 years, specialising in the areas of cable, pipe and combination penetration seals, as well as fire safety joint seals.

In addition to our proven product line of intumescent moulded parts made of PU penetration seal foam, we also offer other construction materials, such as silicone and acrylic for civil engineering, tunnel construction, shipbuilding, and rail vehicles.

In the course of harmonising fire safety in Europe, ZAPP-ZIMMERMANN GmbH tests its fire safety systems in accordance with the European test conditions to obtain a European Technical Approval.



For more information, go to
www.z-z.de



Amerex

For over four decades Amerex has been recognized worldwide for its reliable, high-performance portable and wheeled fire extinguishers and extinguishing agents. Today, Amerex has a full line of fire protection solutions for ever-evolving businesses, including pre-engineered system solutions for commercial cooking operations, road and non-road vehicles, industrial hazards and clean agent fire protection risks.

Portable and wheeled extinguishers include dry chemical, wet chemical, clean

agent, liquid and foam agent types ranging from 2.5 lb. (1.1 kg) to 500 lb. (227 kg) capacities. Amerex extinguishers are the preferred choice for industrial high-hazard high-risks, as well as, commercial and institutional compliance applications.

For commercial cooking operations, Amerex offers two system options to meet the industry's varying needs. AMEREX KP suppression system you get appliance-specific coverage. AMEREX ZD suppression system adds greater flexibility by letting you reconfigure or move appliances without moving nozzles. Both system types can be found in chain restaurants, fine dining, culinary schools, military facilities, hotels and hospitals.

Whether it is an operator sitting high atop a loader or children riding in their school bus, AMEREX Vehicle Suppression Systems (VSS) are designed first and foremost to protect human

life. Our systems are designed and installed to suppress a fire before it can reach the operator or passenger areas, quickly and efficiently.

AMEREX IS Suppression Systems provide either local application or total flood protection for a wide range of industrial applications such as dip tanks, power generators, transformers, quench tanks, or solvent tanks.

At Amerex, we're continuously innovating to meet the latest demands of industrial, commercial and institutional market sectors around the globe. Amerex is ISO 9001, ISO 14000 and OHSAS 18001 certified.

Interschutz: Hall 13 Stand D02
NFPA Conference and Expo: Booth #939



For more information, go to
www.amerex-fire.com



Coltraco Ultrasonics

Coltraco Ultrasonics, a UK based OEM of fixed fire suppression system ultrasonic monitoring equipment will be exhibiting at 2 of this year's leading fire trade shows. Once again we will be exhibiting at the NFPA show in Chicago and at Interschutz the leading international show for the fire industry.

The company was originally started back in 1987 and manufactured one product Portalevel™ which had been developed for use on board naval vessels to monitor fixed fire suppression systems. From this beginning we now work across a number of industry verticals including, Oil & Gas, Marine & Shipping, Naval & Defence, Data Centres, Power Plants and High Rise Buildings.

Today there are 7 different types of Portalevel™ from Portalevel™ Standard to the flagship Portalevel™ Max which has been UL approved. Portalevel™ Max offers users the

quickest and most effective tool for measuring the liquid level of fire suppression gases including CO₂, FM200, NOVEC and FE-13. Portalevel™ is a handheld product which can be used in both onshore and offshore applications. With its user interface and data logging capabilities it has now developed into the most comprehensive portable tool for monitoring fire suppression systems.

In addition to Portalevel™ 18 months ago we introduced our first fully integrated system for monitoring cylinder points 24/7 365 days a year. Permalevel™ Multiplex was developed to build on the products we had to offer the most comprehensive solution possible.

This suite of products ensures are customers in the marine and shipping sector are compliant with IMO SOLAS Regulations particularly Chapter 5 2.1.1.3. As a business we are committed to business continuity via our

Safeship and Safesite programs for offshore and onshore assets respectively.

To find out more or to arrange your appointment with the team at one of these shows please contact the team on sales@coltraco.co.uk



For more information, go to
www.coltraco.co.uk



Tornatech

Based in Montreal, Canada since 1985, Tornatech specializes in the conception and manufacturing of fire pump controllers in accordance with the NFPA 20 standard, listed with UL and approved by FM. In addition, we have developed controllers that meet various local standards and approvals such as A2P (France) and LPCB (UK), to name a few.


Our electric and diesel fire pump controllers feature the ViZiTouch color touch screen operator interface with a 4.2" color display with intuitive graphics, quick and easy commissioning, user-friendly operation and maintenance data logging capabilities. Mechanical features include a compact enclosure design, definite purpose disconnecting means and emergency start handle.

Regardless of the application, all Tornatech products provide our customers with an

innovative solution. Our engineering team is continuously keeping up to date with the latest technologies available and developing tools for the future. We commit ourselves to offering the best technical solution, superior quality and outstanding service.

Over the years, we have not only introduced innovative products but also developed a network of subsidiaries, sales offices and authorized service dealers located around the world to serve our customers better. We have manufacturing capabilities in Montreal, Canada, Wavre, Belgium and Dubai, U.A.E, a sales office in Singapore as well as sales representatives in the U.S.A and Latin America. Today, our products are installed on 5 continents and in over 80 countries.

Be sure to visit us at NFPA (booth 1033) and Interschutz (Stand Hall 13 G81) to learn more about our fire pump controllers.

 For more information, go to www.tornatech.com



Reliable Automatic Sprinkler Company

The Reliable Automatic Sprinkler Company (RASCO) with twenty-two branches based all around the world, is one of the world's largest producers of automatic fire sprinklers, sprinkler control equipment and a major distributor of sprinkler system components. Founded in 1918 by Frank J Fee, Reliable today, four generations on, is still under the leadership of the Fee family and manufacturing innovative devices which protect life and property from the effects of fire.

Reliable's three goals are to be the leading worldwide manufacturer of quality fire sprinklers and system devices, to be a leading supplier of fire sprinkler system components and to exceed all customer expectations.

Reliable's revolution to customer satisfaction in the Sprinkler industry is demonstrated through our prestigious manufacturing facility in Liberty, South Carolina, US, where all of our Sprinklers and

System Control Valves are designed, manufactured and tested. These include our extensive range of Commercial, Storage, Residential, Dry and Special Application sprinklers, along with our range of Alarm, Dry, Deluge and Pre-action valves.

Reliable work closely with leading manufactures worldwide to source and provide our customers with a complete range of products. These include our RASCOFLEX flexible sprinkler hoses, CPVC

pipe and fittings, RASCO branded Butterfly, OS&Y, NRS and check valves, electrical equipment and much more.

We are attending the INTERSCHUTZ exhibition: Hall 13, Stand B28. And The NFPA exhibition: Stand 539.

 For more information, go to www.reliablesprinkler.com



C-TEC

Leading life-safety equipment manufacturer, C-TEC, will unveil its revolutionary new CAST addressable protocol at International Firex.

Hosted at London's ExCeL and featuring influential guest speakers including Karren Brady, Ranulph Fiennes and Chris Hoy, the exhibition runs from 16 to 18 June and is the perfect platform for new fire innovations, technology and solutions.

C-TEC's powerful new proprietary addressable protocol, CAST, will be on display on Stand G140, along with a host of associated devices including a new range of EN54-23 certified visual alarm devices (VADs). The company will also be exhibiting its futuristic ZFP range of 1-8 loop touchscreen-controlled addressable fire panels, ActiV smoke and heat detectors, disabled refuge systems, call systems, induction loop amplifiers and an exciting new EN54-13 compliant conventional fire offering.

Andrew Foster, C-TEC's Managing Director said: "Visitors to the show will have the opportunity to witness the sheer power of our revolutionary new CAST protocol. Developed over five years, CAST has three times the power capability of most commonly available fire alarm

system protocols and is designed to integrate several separate life safety systems onto a single system."

 For more information, go to www.c-tec.co.uk





Dr. STHAMER HAMBURG

FOAM FIGHTS FIRE



MOUSSOL®-FF - ICAO Level B Certified

Used by London Heathrow, London Stansted,
London Gatwick Airports

**We offer a full range of Internationally
Approved, High Performance, Environ-
mentally Compatible Fire Fighting Foams.**

**24/7 EMERGENCY
SUPPLIES** PLEASE CALL
+ 49 40 7361680

Liebigstraße 5 · 22113 Hamburg · Germany
Phone +49 40 73 61 68-0 · Fax +49 40 73 61 68-60
E-mail: info@sthamer.com



www.facebook.com/Dr.Sthamer

www.sthamer.com

Pyroguard

As architectural design continues to increase in scope and ambition, it's vital that architects, specifiers and installers have access to high performance materials that will enable them to realise their vision. Architects strive to combine cutting-edge aesthetics with natural environmental factors, allowing as much natural daylight into buildings as possible.

Insulated Glazing Units (IGUs), whether on a façade or roof, can help to achieve this, so it's little surprise that the popularity of glass as a structural component shows no sign of abating.

Environmentally responsible design and construction can ultimately mean the difference between a project's success or failure, and strict CO₂-reduction targets have already made IGU's a mandatory feature in new construction across much of Europe.

Featuring Pyroguard's fire resistant glass, IGUs can provide protection against flames, heat and fumes for 30 to 180 minutes, helping to safeguard people and property. Available in three main classifications, E, EW and EI, this fire-resistant glass also comes in toughened form: the Pyroguard T range is designed to withstand from three to five times more pressure than average heat-resistant glazing – ideal for buildings in which sheet glass is a key structural component.

Pyroguard's fire glass can help your project exceed environmental requirements. Low-emissivity fire glass offers enhanced thermal insulation, while solar control glazing can reduce heat transmittance during the day while allowing plentiful natural light to penetrate.

All of Pyroguard's products are rigorously tested against the world's leading

environmental assessment methods, providing a range of low carbon, low impact glazing solutions suitable for almost any application.

Pyroguard's heat-resistant glazing can be tailored to contribute significantly to the comfort of the people around it. This fire glass can be used in a way that's sympathetic to contemporary and traditional design; fitted into timber or steel for a strong, tactile finish; and tinted or decorated with ceramic frit patterns for safety, style and privacy.

For more information, go to
www.pyroguard.eu



NewAge Industries

Established in 1960, NewAge Industries is one of the Asia's largest manufacturers of fire fighting equipment having the complete range of equipment from Fire Hoses, Hydrant Valves, Pressure Control Devices, Fittings, Hose Reels & Accessories, Cabinets, Dry Riser Fittings, Standpost Hydrants, Nozzles, Foam Equipment, Monitor and Monitor Nozzles, Pumps, Fire Vehicles, Skid Mounted Equipment and other miscellaneous fire equipment. NewAge is based in Surendranagar with sprawling infrastructure of 50,000 sq mtrs and state-of-art manufacturing facilities. NewAge exports its full array of products to more than 60 countries in the world. NewAge with its diversified group of companies, boasts a comprehensive vertical integration facilities and is completely self reliant for all its production activities.

For more information, go to
www.newage-india.in



Detectortesters

As the market leader for over 20 years, Detectortesters continues to lead the field with innovative products that deliver time and cost saving benefits to fire engineers and building owners worldwide.

Products from the Solo™ product range have become the industry's test tool of choice allowing, through a range of tools, functional testing of smoke, heat, and carbon monoxide (CO) detectors at heights of up to 9m. In recent years, advances in technology have led to changes in detector design resulting in wider use of heat and CO detectors and the introduction of multi-stimulus detectors. Such advances have led to Testfire – a 3 in 1 detector tester capable of testing smoke, heat and CO that enables the move away from pressurised aerosol canisters, requires less kit to be carried on-site and allows functional testing of single and multi-stimulus detectors. The innovation of Testfire was recognised with a

Queen's Award for Enterprise: Innovation in 2014. Despite their popularity, pole-based testers have limitations in the height they can reach and where access is difficult, costly or risky such as in elevator shafts and behind locked doors (due to security or other hazards). Scorpion® is a new way of testing these detectors. With only the smoke-generating head unit mounted in the hard-to-access location, the annual test of the smoke detector is carried out utilising a conveniently sited wall mounted control panel making for easy and risk-free testing. Hospitals, defence sites, transport hubs and academia are already benefiting from Scorpion which has been designed for both point smoke detectors and aspirating smoke detection systems.

All these products, along with relevant case studies will be presented at Firex International in June. If you are visiting be sure to visit us on Stand F110, if you can't make it you can find out more at detectortesters.com

For more information, go to
www.detectortesters.com



We help suppression system OEMs meet regulatory standards with superior electromagnetic solutions.

Call us with your challenge.

CUSTOM AND STANDARD COMPONENTS
ULTRA-FAST RESPONSE
HIGH DURABILITY
RESETTABLE
UL RECOGNIZED COMPONENT
CUSTOM CONFIGURATION
ACTIVE MONITORING
FULLY ENGAGED INSTALLATION DETECTION
COMPLIANT TO NFPA 2001, SEC. 4.3.4.1
15 YEAR LIFE SPAN
FLEXIBLE PACKAGING
AND MORE...



COME VISIT US AT
Interschutz 2015
Hall 013, Booth D51

CALL OUR TEAM:
+1 262-372-2165

ON THE WEB:
www.tlxtech.com



Signalling for
hazardous areas
and
fire & industrial
applications...



Intrinsically safe, flame proof and non-sparking devices for both gas and dust atmospheres.

Fire & industrial products from panel mounted indicators through to heavy industrial signals.

Powerful alarm horns: up to 45 alarm tones with three stages. Voice alarms with up to 2 minutes of user recordable content.

High-intensity visual signals: Xenon strobe, L.E.D., incandescent, halogen and rotating mirror technologies.

Combination signals: extensive sounder and beacon combination possibilities.

Manual call points: break glass, push button and tool reset options.



Global product availability with a 5 year warranty.



www.e2s.com

Integrated Fire Protection

Integrated Fire Protection Pvt. Ltd. (IFP-INDIA) is a market leader in the field of Foam Concentrate, Dry Chemical Powder, Extinguishers and wide range of Fire Fighting Equipments for fire fighting. IFP products are approved, marked & listed to relevant standard specifications viz. UL, Lloyds, BIS, EN etc. UL listed foam Branch Pipe and Inline Inductors are within range of production of IFP. It has also introduced halon substitute clean agent fire extinguisher FE-36 in collaboration with Dupont, USA. The company certified as ISO 9001:2000 and ISO 14001. The in house R&D unit of IFP is dedicated for product development and is approved by Ministry of Science and Technology, Government of India. In house production facilities for 4 million litres of Foam Concentrates, 2,50,000 kgs of Dry Chemical Powder and over 1000 units of equipments per annum. IFP INDIA established since 1985 surpasses customers expectations by offering a wide range of products and dedicated services to the customers around the world.

For more information, go to
www.integratedfire.net



Patol

Patol, the global leader in the design and supply of specialist fire detection products for industrial applications, is returning to the Firex International exhibition, to display and demonstrate its full product range, including all its latest additions.



Exhibiting on stand C125, the company is an industry leader with considerable expertise in the provision of both fire detection products and services, specialising in linear heat detection cable (LHDC) as well as infra-red transit heat and flame sensors for monitoring material moving on conveyor belts and long-range, infrared flame detectors. Patol also offers special fire and safety control equipment and services to industrial customers.

Its expertise ranges from discrete military vehicle monitoring through to multi-discipline systems covering all aspects of fire protection, process control and security. In addition to manufacturing its own ranges of detectors and sensors, privately owned British company Patol undertakes turnkey safety projects covering many aspects including the fabrication of special electronic equipment, software

design, system engineering, contract management, installation and maintenance.

At Firex International in June, the company is looking forward to meeting customers old and new and is anticipating a successful three days. On display will be Patol's linear heat detection cable (LHDC) in all its versions and different types of sheath or over-braiding. The company's infrared sensors and its cable interface/control units will also feature prominently.



For more information, go to
www.patol.co.uk

Specified Technologies Inc.

Specified Technologies Inc. (STI) is an industry leader in developing innovative firestop solutions that help stop the spread of fire, smoke and toxic fumes. STI is a global firestop manufacturer headquartered in Somerville, NJ with offices in Latin America, Europe, the Middle East, India, Southeast Asia and China with representation worldwide.

For the past 25 years, STI has worked closely with the construction industry to create simple solutions to complex firestopping problems. The results are outstanding fire protection systems that offer premium quality and performance and often times, at lowered installed costs. STI offers a full range of product categories designed to address almost any application and backs them with over 1,300 UL® Classified systems – more than any firestop company in the world.

Since firestopping is STI's only business,

they concentrate on providing the highest quality firestopping products and best in class service and support. STI invests the time to understand the unique needs of specific construction segments and applicators and then develops products, tested systems, and programs tailored to meet these needs. The results are industry-changing, innovative, patented technologies such as the EZ-Path® Fire Rated Pathways and Triple S® two-stage intumescent sealants, as well as the industry's first web-based "Submittal Builder™ program." STI is a stable, growing company that does what's right for the long-term and remains committed their values, client partnerships, and the firestop industry.

Please visit STI at the 2015 NFPA Conference & Expo in Chicago on Booth #1151.

For more information, go to
www.stifirestop.com



EFFECTIVE & FRIENDLY. IT'S NOT AN OXYMORON.



Solberg RE-HEALING™ Foam not only provides the performance you are accustomed to with current firefighting foams, and rely on, it's also safe for your firefighters and the environment. RE-HEALING Foam has superior vapor suppression and longer drain time for better burn-back resistance. The first true fluorosurfactant and fluoropolymer-free foam, there are no environmental concerns for persistence, bioaccumulation, or toxic breakdown.

Learn more about RE-HEALING Foam and 1%, 3%, 6%, 3x3% ATC and 3x6% ATC concentrates available at solbergfoam.com/interschutz



Visit us at: Hall 13 Stand D02
8-13 June 2015 • Hannover • Germany



THE SOLBERG COMPANY
1520 Brookfield Avenue
Green Bay, WI 54313
USA
Tel: +1 920 593 9445

SOLBERG SCANDINAVIAN AS
Radpyvegen 721 - Ølsvollstranda
N-5938 Sæbøvågen
Norway
Tel: +47 56 34 97 00

SOLBERG ASIA PACIFIC PTY LTD
3 Charles Street
St. Marys NSW 2760
Australia
Tel: +61 2 9673 5300

SPP Pumps

Fire protection – precision engineered for where it really matters.

Fire is one of the greatest dangers we face. It will take human life in moments. It will devour critical infrastructure in minutes. That is why fire protection is so critical to the landscape of skyscrapers we see around the globe – and also why SPP Pumps is gearing up to showcase its range of fire pumps at this year's Interschutz, taking place from 8th to 13th June 2015.

SPP Pumps takes a 'no limits' approach to fire pumps. Installed in some of the world's most iconic buildings – from the Shard in London to Flame Towers in Baku, Azerbaijan – its Multi-Stage Multi-Outlet (MSMO) pumps have one goal – to protect the people inside the building with the most reliable pump solutions.

Alex Playfair, Head of the Fire Division at

SPP, explains: "Our job is to provide well engineered, expertly manufactured pump solutions. Reliability is key, and we work hard to ensure customers get the best quality products that offer significant cost and space savings – that is what we will be demonstrating at the Show in June."

SPP is the first company to offer FM Approved MSMO pumps. Driven by electric motors or diesel engines, SPP MSMO pumps satisfy any LPCB specification for automatic sprinkler protection in high rise and multiple storey buildings.

To find out more about SPP Pump's range of fire pumps, visit them in Hall 13, Stand G37 at this year's Interschutz.



For more information, go to
www.spppumps.com



BRE

BRE Global Ltd, based in the UK near London, is an independent third party organisation offering certification of fire, security and sustainability products and services to an international market. LPCB is the certification brand used for fire and security products and services. The LPCB mark is accepted worldwide by Authorities Having Jurisdiction. We have representative offices in China, India and Malaysia (serving the ASEAN region).

LPCB listed products can be accessed, free of charge, at www.redbooklive.com or via apps from Apple, Google and Windows.

LPCB certification covers the following areas:

- Fire detection and alarm products and systems
- Manual fire extinguishing equipment
- Automatic sprinkler, water spray and deluge products and systems

- Fixed fire fighting products and systems (gaseous and water mist)
- Passive fire protection products
- Cables
- Fire doors and shutters
- Smoke and fire ventilation systems
- Cladding systems
- Electronic and physical security products
- Related installers
- Management systems

We have been working with industry, specifiers and government since 1868 to set the standards needed to ensure that fire and security products and services perform effectively.

We offer approvals to European, International, British and our own Loss Prevention Standards (LPS). The LPSs are free to download from our website.



If you would like to call by our stand for further information, details are as below.

- International Fire Expo – Red Book Pavilion stand B160.
- NFPA Chicago – booth 470.



For more information, go to
www.bre.co.uk

LPCB®

E2S Warning Signals

On Booth 1162 at the NFPA Conference and Expo in Chicago, 22 – 25 June, E2S Warning Signals, the world's largest independent manufacturer of audible and visual warning devices, will be showcasing its comprehensive product portfolio. On display will be a selection of devices suitable for use in Class I & II Division 1 and 2 areas amongst which there will be the new D1x series, available as combined horn and strobe units, horn sounders or PA loudspeakers.

Headquartered in London, UK, E2S has been manufacturing warning signalling devices for over 20 years combining the latest technology with leading industrial design and build quality. E2S collaborates with system integrators and application engineers to develop custom signalling solutions with substantial benefits such as ease of interface, quick installation and specific performance criteria. Through its Houston based distribution hub and a worldwide network of representatives E2S supplies over 350 product variants covering hazardous locations, marine and industrial applications; all available on fast lead times and backed by a 5 year guarantee.

Personnel from both the E2S Houston and London facility will be on stand-by at the booth to discuss your signalling requirements.



For more information, go to
www.e2s.com



IN CASE OF FIRE EMERGENCY,

THE NEW ERA IN FIRE FIGHTING SOLUTIONS & SYSTEMS

THE NEWAGE OF
FIRE PROTECTION



BREAK NEW GROUNDS OF INNOVATION

INTERSCHUTZ
2015



Date: 8-13 June 2015

Hall No.: 13 Stand: F40

Venue: Hannover, Germany



With an enviable experience that spans over 55 successful years and 60+ countries, NewAge Fire Fighting has become a globally certified and leading brand in fire fighting solutions and systems. One of Asia's most experienced and trusted name, NewAge Fire Fighting houses vertically integrated and robust infrastructure for production of Fire Hoses & Fittings, Fire Equipment, Monitors & Nozzles, Fire Vehicles & Accessories.

OUR FIRE FIGHTING EQUIPMENT

FIRE FIGHTING SOLUTIONS & SYSTEMS FOR

| Hose | Branch Pipe | Nozzle | Hydrants | Hi-Ex Foam Generator
| Water Form Monitor | Fire Vehicles | Hydraulic Platform Vehicle | Foam Equipment
| Oil & Gas | Chemical & Fertilizer | Power Plants | Aviation | Port Trusts
| Defense | Infrastructure | Petrochemicals | Marine & Offshore



| Ambavadi Industrial Estate, Surendranagar - 363001, Gujarat, INDIA
| P: +91 2752 660500 / 288000 | E: info@newage-india.in

Interschutz 2015

Fire fighting, disaster relief and rescue

From 8 to 13 June 2015, the gates will once again be opening on the world's most renowned exhibition for rescue workers, firefighters and related professionals – an unparalleled showcase of the latest equipment and innovative approaches to emergency rescue. Some 1,300 companies from 46 countries will be presenting their cutting-edge products and services in Hannover, Germany.

As the leading international event for firefighting and disaster relief, INTERSCHUTZ puts the spotlight on the technologies of tomorrow.

Fire Fighting

All methods of firefighting rely on starving the fire of one or more of the three things it needs in order to keep going – heat, oxygen and combustible material. In that sense, nothing has changed since the days of Ancient Egypt. What has changed is that modern firefighters are a lot more systematic in the way they go about their job. They don't just eliminate the immediate danger; they keep a watchful eye on downstream risk and damage as well. Consequently, modern fire call-outs are a lot less spectacular than in the past. That's because speed is not the only requirement; getting fires under control also calls for careful consideration – a measured approach that may sometimes appear slower and more deliberate, but which gets the job done more effectively.

Discover for yourself just how effective today's fire-extinguishing technology can be at INTERSCHUTZ 2015. In halls 13 and 27 and on the open-air site, fire protection specialists from over 40 nations will showcase their innovations and world-firsts in fire protection and firefighting technology.

Main themes

- Vehicles and vehicle equipment
- Equipment for fire stations and workshops
- Associations, organizations, service companies

Disaster Relief

At INTERSCHUTZ 2015, visitors will be able to witness the latest disaster relief and management technologies innovations first-hand. Disaster management mobilisations like these pose major logistical as well as technical challenges. Solutions for meeting those challenges – everything from rugged water purification equipment to innovative software for managing and coordinating disaster relief efforts – will be on show in the Disaster Relief display areas in Hall 26 and on the open-air site at INTERSCHUTZ 2015.

Main themes

- Vehicles and vehicle equipment
- Equipment for technical support and disaster relief
- Associations, organizations, service companies

**INTERSCHUTZ
2015**



Rescue

Rescue professionals, manufacturers of vehicles and medical equipment, and paramedics will be presenting the latest and greatest of these in Hall 26 and on the open-air site at INTERSCHUTZ 2015.

In the emergency and rescue services, speed is obviously very important, but so too is having properly qualified and equipped personnel. Emergency and rescue professionals work closely with manufacturers of medical equipment and vehicles to continually optimize the care and service provided by first responders. At INTERSCHUTZ 2015, they will showcase their latest results.

Main themes

- Vehicles and vehicle equipment
- Rescue, emergency, first-aid, and (para)medical equipment
- Associations, organizations, service companies

Toughest Firefighter Alive

The exciting contest for the prestigious "Toughest Firefighter" title is back again in 2015. And this time we are looking for the world champion. Preparations are already in high gear.

Interschutz 2015 Product Categories

- Associations, organizations, service companies, schools
- Equipment for fire stations and workshops
- Fire extinguishing technology, agents
- Information and organization
- Measuring and detection apparatus
- Personal protective equipment
- Rescue, emergency, first-aid, and (para) medical equipment
- Technical literature, model making, fan and gift items
- Technical support and environmental protection
- Vehicles and vehicle equipment

 **For further information, go to**
www.interschutz.de/home





Firetrace International

Firetrace International, a leading manufacturer of fire suppression solutions for commercial, industrial, government and military applications, has recently announced the achievement of the SP Technical Research Institute of Sweden's P-Mark for its bus-specific fire suppression systems.

Firetrace systems already carry major listings and approvals from UL, ULC, CE, FM, and more than 20 other international agencies. In April 2014, Firetrace's advanced E4 engineered clean agent total flooding system earned the distinguished Underwriters Laboratories (UL) Listing.

Designed for simple installation very near the source of a potential fire, Firetrace is a self-activating fire suppression system that reliably suppresses fires in seconds providing a low maintenance, cost effective solution to "micro-environment" fire protection. Firetrace systems can be installed in virtually any enclosed space

where high-value assets are located or where an increased risk of fire could be mitigated by an automatic fire suppression system.

Scott Starr, Director of Marketing, Firetrace International commented: "Firetrace has invested considerable time and expertise in designing a realistic system worthy of achieving P-Mark status. We have developed a systems that uses minimal agent and minimal number of nozzles, aspects that will save bus operators time and money on installation and maintenance costs, while maintaining the reputation for reliability that Firetrace has been known for."

Firetrace International is headquartered in Scottsdale, Arizona, with its European offices in Gatwick in the UK and its Middle East headquarters in Dubai.



For more information, go to
www.firetrace.com



ASFP

The Association for Specialist Fire Protection (ASFP) will be welcoming visitors to the ASFP Passive Fire Protection Zone, at this year's Firex International at London's ExCel on 16-18th June.

A central element of this year's ASFP facility will be a dedicated 'Experts Clinic' where passive fire protection industry professionals will be on hand to provide advice and guidance to facilities managers, contractors, services installers, Responsible Persons and designers on products and services in relation to 'built-in' fire protection.

The Zone and surrounding ASFP member stands will showcase best practice and the essential role of passive fire protection within today's built environment, with clear examples of how to install products correctly to achieve maximum performance, using the right materials and approaches to fire safety.

The ASFP will be offering the visitor a wealth of

essential documentation, publications and videos, including the 2nd edition of its Best Practice Guide in Passive Fire Protection. The Guide to Ensuring Best Practice for Passive Fire Protection in Buildings contains essential guidance relating to the installation, specification, commissioning and purchasing of passive fire protection. This new document offers advice in a fresh, easy-to-read format, with recommendations clearly highlighted within the text and summarised at the end of each section.

The Association will also be showcasing its new passive fire protection awareness training programme, designed to up-skill the supply chain involved in the installation of passive fire protection and improving the knowledge base of those involved in the design, supply, inspection and maintenance of passive fire protection.

For further information on ASFP activities and

to access the ASFP's extensive range of free to view guidance documents and videos, please visit www.asfp.org.uk; call 01420 471612; or email info@asfp.org.uk.



For more information, go to
www.asfp.org.uk



Vimpex

The new VIMPEX VAD23™ Range of EN 54-23 Visual Alarm Devices (VADs) will be the key focus on the company's stand at this year's Firex International. VIMPEX VAD23™ is an extremely versatile family of products; with devices for wall and ceiling mounting and models that combine



either a traditional electronic sounder or a voice sounder with a low current EN 54-23 rated VAD. The WMBS wall mounted VAD is fully compatible with the popular Excel range of sounders and beacons. The VIMPEX VAD23™ devices are fully specified, delivering market-leading light coverage, significant installation cost savings and flexible solutions for the designer and end-user.

Vimpex's commitment to EN 54 approved products extends to the Fire-Cryer® Plus Voice sounder, which is now approved to EN 54-3 and remains the most versatile and intelligible voice sounder available.

Alongside these products visitors to stand D142 will see the new Smart+Guard series

of call point protective covers from Sigma Fire & Security. Exclusively available to the trade in the UK from Vimpex, this exciting new product has come to market through a strategic partnership with Sigma. Smart+Guard is a tough polycarbonate hinged protective cover that can easily be installed over a range of call points, emergency switches and other devices to provide protection from vandalism, accidental damage or misuse.

Also on show will be Vimpex's wide range of alarm and evacuation products, which include fire alarm sounders and voice sounders, bells, call points, PSU's, door holders, water leak detection systems, photoluminescent life safety signage and fire alarm accessories.



For more information, go to
www.vimpex.co.uk



Tyco Fire Protection Products

Tyco Fire Protection Products is bringing its solutions to life at Interschutz 2015 with its Tyco City concept. By showing how its products apply to real applications, Tyco is creating an environment that puts effective fire protection at the heart of a modern city.

Tyco City will be divided into eight zones, each representing a different product group to emphasise the range and versatility of Tyco's solutions. A key highlight will be augmented reality (AR), which will enable visitors to take an interactive tour of the Tyco City stand. Complemented by graphics and

3D animation, the technology will bring Tyco's products to life to show how they protect different environments, such as hotels, restaurant kitchens, datacentres and tunnels.

On display in the outside demonstration area will be the WILLIAMS Dependapower water pumping system. Visitors can benefit from a closer look at this robust solution, built to sustain the large volumes and high pressures required when facing major industrial fires. Tyco's ZETTLER truck will also make an appearance at the Interschutz demonstration area, featuring the new PROFILE series of fire panels, its latest innovation in fire detection technology.

Tyco will exhibit on stand B60 and the open-air site (FG), stand P12.

 For more information, go to www.tfpemea.com



Marvon

Part of Fondital Group, Marvon is an Italian company world leader in the fire-prevention sector. Boasting a 40-year experience, Marvon combines a 100% Made in Italy production and a constant commitment for innovation, quality and attention for environment, as shown by its many certifications, as the environmental certificate ISO 14001 and the ISO 9001 on quality system.

Marvon production covers all the needs of the fire prevention sector through cutting-edge high-quality products. First of all, the firestop door handles, which, certified according to the DIN 18723, guarantees the opening of the door during and after a fire. Flagship of Marvon production is the new handle with spring which ensures the return to the axis of the door and prevents any imperfections due to wear and tear of the mechanical parts making up the locking system of the door. The fire-stop range is completed by the intumescent seals, which expands up to 10 times their volume when exposed to high temperatures, thus guaranteeing perfect seal in case of fire, and by Daisy. Daisy is Marvon's fire stop collar, which is suitable for installation on plastic waste and drainage pipes in the wall and ceiling, and which has a fire resistance class of EI240 in compliance with European Standard EN 1366-3.

 For more information, go to www.fonditalgroup.com



Polon-Alfa

PPW-40REx detector provides high flame detection efficiency of fuels containing hydrocarbons, while maintaining a high immunity to false alarms due to a set of three infrared sensors operating in different bands. It is intended for use in potentially explosive mixtures of gases and vapors of flammable liquids with air

(ATEX subgroups IIA, IIB, IIC) and in explosive air mixtures of combustible dust (ATEX subgroups IIIA, IIIB, IIIC). Detector is designed for indoor and outdoor application.

Key features

Outputs: alarm and fault relays, current loop output.

Automatic optics' test. The self-test is performed on the detector every 1 minute. This eliminates the need of testing the detector by the technician with open flame or other source causing detector's activation.

Manual optics' test. Manually made test works like automatic one with the difference that the successful test causes the activation of fire relay "ALARM". Manual test should be carried out just to eliminate the need for testing the detector with open flame or other source causing its activation.


Communication

The detector is equipped with the RS-485 interface, which cooperates with the service software. This software allows for:

- Providing information about the detector's mode of operation to a PC,
- Selection of the relay's operating mode ("latch", "without latch"),
- Execution of optics test,
- Download of "EVENT LOG".

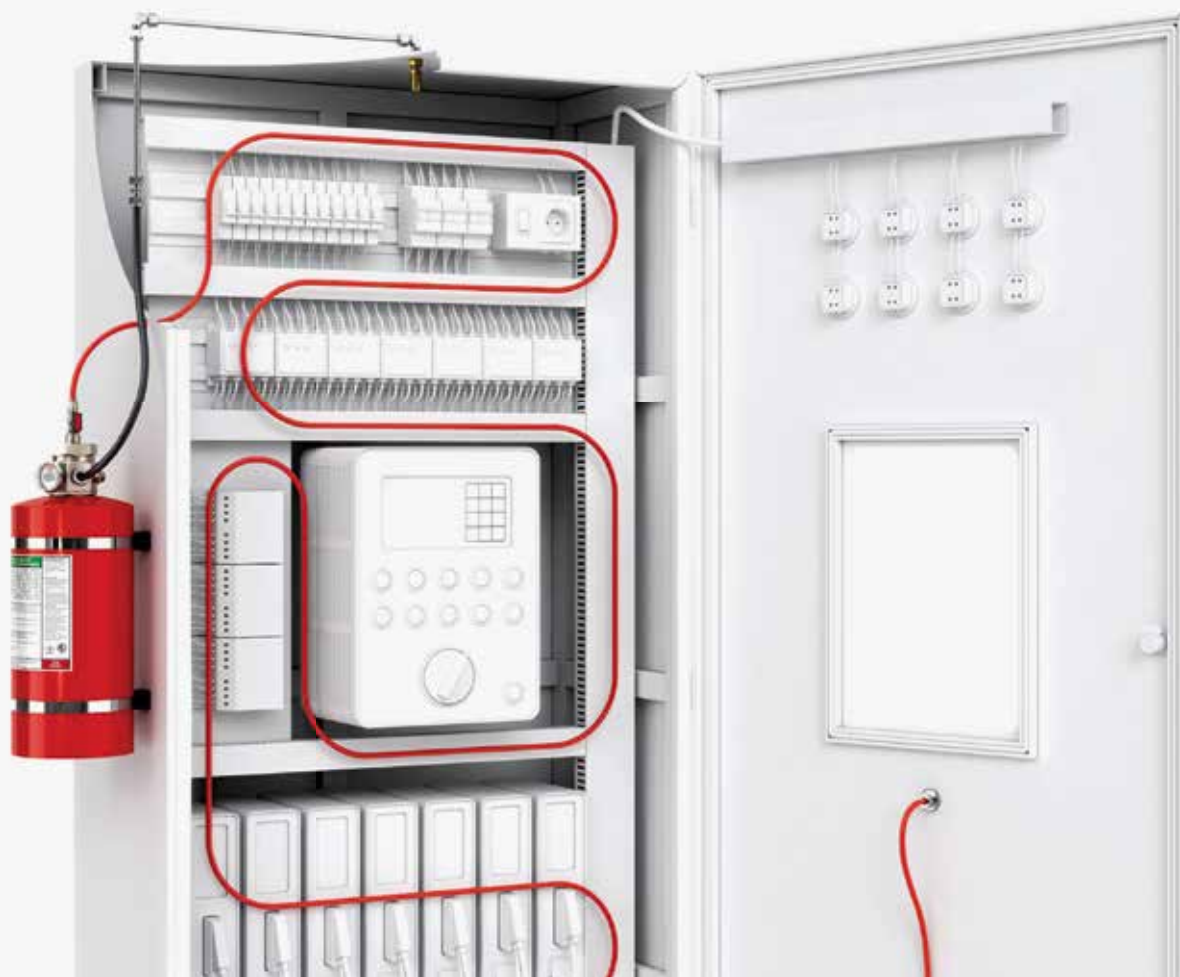
Event LOG

The detector records and stores events in non-volatile memory. Each event is stored with the following information: date, time, temperature in the detector and value of supply voltage.

 For more information, go to www.polon-alfa.pl



DEVELOP YOUR INSIDE SALES



**There's a FireDETEC® for every customer.
Discover the full range of solutions.**



For most high-risk equipment, fire starts on the INSIDE. Now, there's a fire suppression system that installs on the INSIDE - and it opens a whole new world.

FireDETEC®. It's a local fire suppression system that installs directly INSIDE mission-critical equipment- closer to where fire starts. It automatically detects and suppresses fire quicker, before it can do significant damage.

For your customers, FireDETEC® means extra confidence. For you, it means extra sales. Become a distributor and exploit your INSIDE sales opportunity.

DISCOVER MORE INNOVATION

Hall 13, Stand C43
8-13 June 2015
Hanover, Germany



Spectrex Inc.

Spectrex Inc. is a technology leader in optical Flame and Open Path Gas Detection (OPGD). Spectrex developed and patented industrial optical IR3 Flame Detector and Xenon Flash OPGD detectors, designs are now standard for Oil & Gas projects. A wide range of flame detectors types are available, from ultra fast (msec) detectors to high sensitivity hydrocarbon and hydrogen flame detectors, alongside the equally large range of OPGD that can detect hazardous gases, from flammable hydrocarbons to toxic Ammonia and H₂S. All Spectrex products are approved and certified to meet relevant third-party Ex hazardous area, performance and reliability approvals for the wide range of application challenges, worldwide.

The SharpEye 40/40 Optical Flame Detector Series offers a variety of accurate, explosion proof detection technologies for flame detection

at distances up to 215ft (65m), including the renowned IR3 detector, multi IR, UV/IR, UV and single IR detectors. The range has recently been enhanced with a new Ultra Fast UV/IR detector which provides detection in 2msec. Other more compact and commercial models are also available, including the low cost MPI model.

The SafEye Open Path Gas Detector Series includes relatively lightweight detectors able to detect at long distances with high immunity to spurious alarms. Hydrocarbon gases can be

detected by the Quasar 900 Series over an open path of up to 660ft (200m), and have recently been joined by the Quasar 950/960 detectors able to detect toxic gases such as ammonia and H₂S over paths of up to 265ft (80m). Also available are Duct Mounted OPGD detectors, providing fast protection within turbine or air intake ducts.

 For more information, go to
www.spectrex-inc.com



Nittan

The Nittan Group has been at the very forefront of the international fire protection industry since 1954 and has sales, RandD and manufacturing bases in Japan, China, Sweden and the UK. Nittan has an enviable reputation for continuous innovation and exceptional quality. The group currently enjoys a £275m turnover worldwide and manufactures over four million detectors each year, while pursuing a commitment to total excellence in everything we do.

Despite its position as a major global fire safety specialist company, Nittan always prides itself in providing a dedicated and personal service to its clients. When you look to Nittan to provide you with an optimum fire safety solution, you'll enjoy all the major benefits of dealing with a world leader – while receiving a personal level of service and support that few large companies could ever hope to achieve.

Nittan has considerable specialist expertise in designing and supplying fire safety systems for some of the most demanding markets on earth. We have specialist divisions dedicated solely to engineering for oil refineries and marine applications for example. Both industries set safety standards well in excess of those demanded in most other fields.

Because we possess this expertise, we routinely apply it to everything we do, bringing the very highest standards of build quality, engineering excellence, high performance and unrivalled reliability into all of our fire products.

When you specify a Nittan system, you'll directly benefit from this unrivalled expertise and commitment to standards far above the industry norm.

Come and visit us at Firex 2015 on stand number G165.



NITTAN



 For more information, go to
www.nittan.co.uk

Solberg

Solberg is your one-stop resource for firefighting foam concentrates and custom-designed foam suppression systems hardware. An Amerex Corporation company, Solberg offers an extensive line of sustainable environment-friendly firefighting foam concentrates. SOLBERG Foam Suppression Systems Hardware is engineered by a team with over 225 years of combined in-the-field fire protection experience.



RE-HEALING™ foam is an innovative, high fire performing fluorine-free firefighting foam used to extinguish Class B fuels. RE-HEALING foam can also be used to prevent re-ignition of a liquid spill and control hazardous vapors. SOLBERG RE-HEALING foam concentrates are designed to replace traditional AFFF and AR-AFFF foam concentrates and older fluoroprotein foams. Concentrates are available in 1%, 3%, 6% 3x3% ATC™ and 3x6% ATC™ formulations.

The first U.S. Environmental Protection Agency Stewardship Program – 2015 Compliant C6 Foam Concentrates. Intended for use on Class B hydrocarbon fuel fires, ARCTIC™ AFFF foam concentrates are available in 1%, 3% and 6% formulations. ARCTIC ATC foam concentrates are intended for use hydrocarbon and polar solvent fuel fires. Concentrates include 1X3%, 3x3%, and 3x6% ATC formulations.

FIRE-BRAKE™ foam concentrate from

SOLBERG meets NFPA 1150 and is listed on USDA Forest Service (USFS) Qualified Products List (QPL). FIRE-BRAKE foam concentrate is a synthetic firefighting foam concentrate specially designed to be used for wildland, structural and other Class A fuel fires. The foam concentrate is biodegradable and non-toxic, so it is environmentally sustainable. FIRE-BRAKE foam concentrate has the ability to reduce the surface tension of water, which substantially increases water's overall wetting capability.

At Solberg, we continually pioneer firefighting foam technologies to meet the latest demands of the aerospace, aviation, chemical, defense, energy, fire services, marine, mining, oil and gas, petrochemical, pharmaceutical, pipeline, solvent and coatings and utilities industries.

 For more information, go to
www.solbergfoam.com



Better detection by design.



The Nittan Group has been at the forefront of the international fire protection industry since 1954 and has sales, R&D and manufacturing bases in four countries, including the UK.

Nittan manufactures over four million detectors each year and has specialist expertise in designing and supplying fire safety systems for some of the most demanding, regulated markets on earth, including marine and oil. We apply our engineering excellence to all our products bringing the highest standards of build quality, performance and reliability, exceeding the standards for even the most demanding of markets.

NITTAN

www.nittan.co.uk | tel: +44 (0) 1483 769555 | email: sales@nittan.co.uk

Xtralis

The VESDA-E VEA series of aspirating smoke detectors combine VESDA reliability and early warning smoke detection with pinpoint addressability and a variety of annunciation options. They use patented air sampling points and multi-channel micro-bore air-sampling with enhanced or standard alarm sensitivity setting for the sampling points. As a multi-channel addressable system, the VEA detector is able to divide a protected space into sampling locations, enabling the localization of a fire for faster incident response.

The detectors are suitable for protection of areas where pinpoint location of fire events is essential, thus providing ideal fire detection solutions for offices, hospitals, schools, prisons, multi-story dwellings, cabinets in data centers and warehouse racks. A wide range of features provide flexibility, field programmability,

enhanced connectivity and reduced total cost of ownership.

Highlights include:

- VESDA detection performance with pin-point addressability using micro-bore tubes
- Assured detection with early warning
- Interruption free operation in protected area with centralized detection
- Tube integrity monitoring
- Remote monitoring with iVESDA app from handheld devices
- Scalable solution delivers flexibility
- UL268 Approved

Xtralis will be exhibiting at NFPA on stand 211 and at FIREX on stand D950



For more information, go to www.xtralis.com

Moflash Signalling Ltd

Moflash Signalling Ltd (Moflash) is a leading manufacturer of signalling devices for the fire, industrial and explosion-proof markets. Operating from our head office and factory in Highgate, Birmingham, our products are available via a network of national and international partners.



In addition to our sales offices in the UK, Germany and Singapore, our in-house technical team (based at our head office) can offer bespoke design and tailor products to suit you and your customer's individual needs.

EN54 Pt:23 products

Protect lives with signals products that conform to EN54 Pt:23 which are available from Moflash. Compliant to the new European fire standard, the Sonos Wall or Ceiling mounted beacons along with a Nexus combined sounder/beacon offer you a choice of red or white flash that will dictate the final coverage volume.

Need a product suitable for a harsh environment that is ATEX and IECEx approved?

The explosion proof product range available from Moflash, carries ATEX and IECEx approvals for applications within zones 1, 2, 21 & 22. Typical applications will be situated in Oil and Gas, On-shore and Offshore, Chemical, Petrochemical, Refineries & Marine locations. Also available within the range are Intrinsically Safe zone 0 beacons and sounders plus a complete range of call points glands and junction boxes.

Contact Us

For more information on any of these products or to view the entire Moflash product portfolio you can speak to our UK based sales team on: 0121 446 5322.

For more information, go to www.moflash.co.uk

The International Water Mist Association

The International Water Mist Association (IWMA) was founded on 4th April 1998. It started maintaining a permanent office near Magdeburg in 2000, then moved to Hamburg in 2012.

IWMA is the only association exclusively dedicated to water mist fire-fighting and related technologies. In the beginning the aim was to clarify that water mist is no auxiliary technology, but a sufficient method to extinguish fires. Nowadays the organization supports the continued development and research of generic water mist systems.

In 2001 IWMA started organizing annual conferences. The first one took place in Vienna, Austria. The next one will take place in Amsterdam, Netherlands, on 28th and 29th October 2015.

Two incidents levelled the way for water mist. First there was the ban of halon in the late 1980s through the Montreal Protocol. Then there was

a devastating fire on a passenger ferry – the Scandinavian Star – which killed 158 people. These two events called for alternatives and triggered off the re-discovery and advancement of a technology that has its roots in the 1880s.

In 1998 the time had come to establish an association. Since then IWMA has brought together those who are active in that business. And it dealt with a major issue: the establishment of international guidelines for the approval of water mist systems.

"IWMA has become the world leading forum for manufacturers, laboratories, classification institutions, academic institutions and users of water mist fire-fighting systems", says Ragnar Wighus, chief scientist at SP Sweden and chairman of the IWMA-board.

For more information, go to www.iwma.net





MOFLASH[★]

SIGNALLING

Moflash Signalling Ltd (Moflash) is a UK based manufacturer of signalling devices for the fire, industrial and explosion proof markets.

EN54 Pt:23 products: Protect lives with signals products that conform to EN54 Pt:23 which are available from Moflash. Compliant to the new European fire standard, the Sonos Wall or Ceiling mounted beacons along with a Nexus combined sounder/beacon offer you a choice of red or white flash that will dictate the final coverage volume.

Need a product suitable for a harsh environment that is ATEX and IECEx approved?
The explosion proof product range available from Moflash, carries ATEX and IECEx approvals for applications within zones 1, 2, 21 & 22. The range includes: Beacons, Sounders, Sounder/ Combined Units, Status Lights, as well as a complete range of call points glands and junction boxes. Also available within the range are Intrinsically Safe zone 0 beacons and sounders.

Contact Us

For more information on any of these products or to view the entire Moflash product portfolio visit our web site at: www.moflash.co.uk or you can speak to our UK based sales team on: +44 (0) 121 446 5322.



www.moflash.co.uk

LPCB offers independent approval of fire and security products and services to an international market.

Red Book listing demonstrates ongoing compliance with specified standards and is the essential reference for specifiers, regulators, designers and end-users.

The Red Book is recognised by Authorities Having Jurisdiction across the Middle East and many other countries worldwide.

Visit us at:

Firex International, London: 16 -18 June
NFPA, Chicago: 22-25 June

+44 (0)1923 664100
enquiries@lpcb.com quote ref: LPCBIFP
www.redbooklive.com



bre

NFPA Conference & Expo

The Premier Event in Fire & Life Safety Comes Back to Chicago

Every year, thousands of the leading fire, electrical and building safety professionals, from around the world consider attendance at the NFPA Conference & Expo a must.

The 2015 NFPA Conference & Expo is widely regarded as the most comprehensive event in the industry. Taking place at McCormick Place in Chicago, the event combines an unrivaled educational conference with an expo of more than 300 solution providers.

Why do they keep coming back?

They know there's no better place to be when they're looking for ways to do a better job, update their knowledge, solve a problem, save money, make more money, keep up with their competition and much more. In general, show their commitment to a very important shared mission. That mission has been the NFPA's mission for more than a hundred years; to reduce the pain, suffering and financial burden created by a fire, an explosion, or an unsafe electrical discharge.

What is the NFPA?

The NFPA is the world's leading advocate of fire prevention and an authoritative source on public safety. NFPA develops, publishes, and disseminates more than 300 consensus codes and standards intended to minimize the possibility and effects of fire and related risks.

The NFPA publishes 300 codes and standards that influence every building, process, service, design, and installation in the U.S. and many other countries. These codes have been developed by its members and other industry stakeholders over the course of the association's 115 years of concerted effort, and are continuously refined through research, training, communication, and a robust consensus building process.

The annual event, NFPA Conference & Expo, plays a key role in developing and disseminating code information through a comprehensive technical program, and for the ever evolving consensus codes, the NFPA Technical Meeting where revisions, motions, and consent documents are presented and voted on.

Who should attend?

Professionals concerned with protecting people and property in any & all building and facility types --and anyone who shoulders responsibility in the areas of:

- Fire Prevention
- Life Safety
- Electrical Safety
- Premise Security
- Building Design & Management
- Fire & Emergency Services
- Loss Control & Risk Management

Conference Program

The 2015 conference offers more than 150 educational sessions, divided into tracks to help attendees identify sessions that best meet their professional needs. Plus, we've added two new tracks this year – Sustainability and Health Care!

- Building & Life Safety
- Codes & Standards
- Detection & Notification
- Electrical
- Emergency Preparedness/Business Continuity
- Fire & Emergency Services
- Fire Protection Engineering



- Fire Suppression
- Health Care
- Loss Control/Prevention
- Public Education
- Research
- Sustainability

Record-setting Exhibition

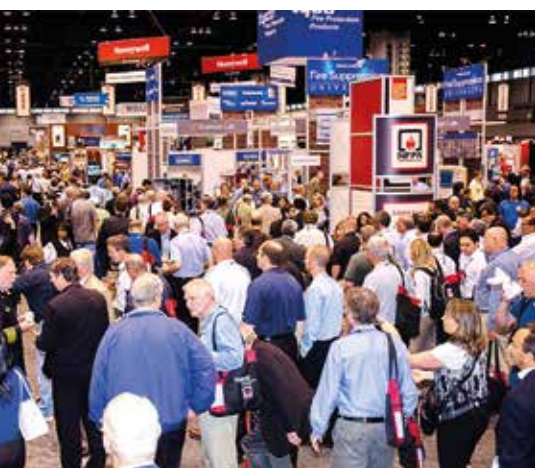
Alongside the conference programming is a three day product exposition featuring the world's top suppliers. Over three hundred exhibitors will be demonstrating the latest products, technologies and equipment for fire prevention and suppression; alarming and mass notification; system design & installation, testing, maintenance; and enhancing life safety measures.

The NFPA Technical Meeting

The NFPA Technical Meeting will be held at McCormick Place in Chicago. The meeting will begin at 2pm on Wednesday, June 24th and will continue on Thursday, June 25th with breaks as required. The NFPA Technical Meeting is an important step in developing a complete record to assist the Standards Council in determining the degree of consensus achieved on proposed changes to NFPA documents. NFPA Technical Meetings are held annually at the NFPA Conference & Expo.



**For more information, go to
www.nfpa.org**



YOUR PATH TO SAFER BUILDINGS



VISIT UL
Interschutz, Hanover,
Hall 13, H75 and
Firex, London, D170

Testing and Certification for Market Access to Europe, Middle East and North America

Delivering a vast portfolio of global market access solutions, UL provides the highest level of regulatory acceptance and market recognition for the building and life safety sectors. UL offers a wide range of testing and certification services to meet your global certification requirements for fire safety, building materials, life safety and security, fire suppression, personal protection equipment and many more.



**For additional information, please visit www.ul.com
or email info.eu@eu.ul.com.**

UL and the UL logo are trademarks of UL LLC © 2015



The Importance of Listing Sprinkler Equipment

The hanging and bracing of a sprinkler system is a key consideration in every sprinkler design and installation. Assuring that the hanging and bracing products used to install sprinkler systems are effective is imperative for proper performance and stability of the system. One method for achieving such assurance is through the third party UL Listing of the hanging and bracing products.



Jeff Hebenstreit

Jeff Hebenstreit is a Principal Engineer at UL specializing in fire suppression products.

Chapter 9 of NFPA 13 – Standard for the Installation of Sprinkler Systems states that “...the components of hanger assemblies that directly attach to the pipe or to the building structure shall be listed.” There are some exceptions, as permitted by other sections of NFPA 13. To demonstrate compliance with this section, UL offers a Listing service that lets end users and Code Officials know that the manufacturer has submitted a product through the evaluation process with successful results and is manufacturing the product in accordance with the UL Certification Program requirements.

An example of this is a product Listed to Standard ANSI/UL 203 – Pipe Hanger Equipment for Fire Protection Service. The scope of UL 203 covers the performance of pipe hanger equipment for use in supporting pipe employed in sprinkler systems, water-spray systems, and other piping systems used in fire protection. This includes products, such as various hanger types (band, clevis, ring, etc.), brackets, flange clamps and C clamps, ceiling flanges, clips, concrete inserts, couplings, expansion anchors, powder driven fasteners, and retaining straps. The load evaluation requirements for such pipe hanger equipment within UL 203 are consistent with the NFPA 13 requirements. Similarly UL 203A – Sway Brace Devices for Sprinkler System Piping contains requirements for sway brace devices.

UL 203 Testing

Products submitted for evaluation are installed and evaluated in a manner to simulate field installations. For example, hangers are installed in a test assembly

with the test load applied to a pipe in the hanger, and anchors are installed in concrete blocks for testing. For hangers and other equipment used to support pipe covered by UL 203, testing may consist of the following depending on the product type:

- **Metallic Coating Thickness Test** – applicable for coatings where corrosion resistance is required based on product design
- **Pull Test** – applicable to load bearing hanging equipment to evaluate the product strength to withstand the test loads, without rupture, pull out or release of load.
- **Equipment for metallic pipe** – tested with load equivalent to 5X the weight of 15 ft span of schedule 40 steel water filled pipe plus 250 lbs, or minimum load of 750 lbs for 2” and smaller pipe.
- **Equipment for thermoplastic pipe** – tested with load equivalent to 5X the weight of 15 ft span of thermoplastic water filled pipe plus 250 lbs, or minimum load of 340 lbs for 2” and smaller pipe.
- **Threaded parts** are installed and tightened to specific torques for testing.
- **Concrete inserts, expansion shells/anchors, and fasteners** are installed into concrete blocks for testing.
- **Vibration Test** – applicable to expansion anchors, powder driven fasteners, welded studs, C-clamps without locking nut or retaining strap, and other hangers subject to performance under vibration. This test consists of 100 hrs vibration with a test load applied.



- Upward Thrust Test – applicable to products intended to restrain the vertical movement of pipe and shall withstand 340 lbs without displacement of more than 1/8 inch.

UL Listing Process

There are multiple elements of UL's Listing process for a product. For example, the steps in the table below are part of an evaluation for a new manufacturer of hanging equipment:

Summary

Proper system support is a critical aspect of an installation to achieve the desired level of protection expected of a sprinkler system. Manufacturers find value in having a UL Listing for a product, knowing that an independent third party has evaluated representative samples of the product against the requirements of the standard. Authorities having jurisdiction, end users, and product installers look for the UL Listing Mark as an indication that the product has been manufactured in accordance with the UL requirements. The evaluation process identifies those products that do not meet the standard requirements. The UL Surveillance Program is a key component of the Listing as it provides a counter-check that products are continuing to be manufactured in accordance the specifications of the originally evaluated product. These aspects combined make UL Listing of a product an important element in the design and installation of effective fire sprinkler systems.



For further information, go to
www.ul.com

UL Listing Process Information

Product Information Submittal and Development of Evaluation Plan	To get started, a manufacturer provides information to UL on the product being submitted for evaluation. UL reviews this information to develop an evaluation plan, which may vary dependent on the product features. The plan will generally consist of a construction review and performance testing.
Construction Review and Product Testing	Once the evaluation plan is finalized, representative samples of the product are sent to UL for the evaluation. Upon receipt of the representative samples, a construction review is conducted to evaluate any dimensional and product design requirements. The samples are then subject to the testing required by the standard for evaluation. A review of the required marking and installation instructions is also conducted at this point.
Compliant Product Certification Report	<p>The results for products that are found compliant with the requirements of the standard are provided to the manufacturer in a certification report.</p> <p>Once a product is listed, manufactures are required to continue manufacturing the product in accordance with the specifications of the product that was submitted for evaluation. These specifications are documented and reviewed during the UL surveillance audits.</p>
Non-Compliant Product	A letter report is issued to manufacturers where products are found to be non-compliant and no Listing is granted. Products may be redesigned to address the inadequacies for reevaluation. Ultimately this process assures that only those products meeting the requirements of the standards are listed, thus enabling only compliant products to bear the UL Mark.
Factory Inspection and UL Listing Mark	Prior to manufacturing product that is eligible to be UL Listed, the UL Field Representative will audit the new manufacturer facility to verify the product is being produced in accordance with the UL requirements and the manufacturer is clear on the application of the UL Listing Mark.
Application of the UL Listing Mark	Product that is manufactured in accordance with the UL requirements is eligible to be marked as UL Listed.
UL Surveillance Program	A very important aspect of a product listing is the continued surveillance of products. Manufacturers of listed products are enrolled into UL's Follow-Up Service program. This program consist of product inspection through periodic audits at the manufacturing site by UL's trained Field Representatives and testing of listed products to verify its continued compliance with the product requirements. The visits by UL Field Representatives are generally unannounced and during these inspections, samples are also selected and sent to UL. These samples undergo further examination and testing as part of the ongoing surveillance.

Life Safety and Fire Fighting Systems – The weakest link

Unlike other cables, fire resistant cables have to work even when directly exposed to the fire to keep essential Life Safety and Fire Fighting equipment working: Fire alarms, Emergency Lighting, Emergency Communication, Fire Sprinkler pumps, Fireman's Lift sub-main, Smoke extraction fans, Smoke dampers, Stair pressurization fans, Emergency Generator circuits etc.



Jamie Groves

In order to classify electric cables as fire resistant they are required to undergo testing and certification. Perhaps the first common fire tests on cables were IEC 331: 1970 and later BS6387:1983 which adopted a gas ribbon burner test to produce a flame in which cables were placed.

Since the revision of BS6387 in 1994 there have been 11 enhancements, revisions or new test standards introduced by British Standards for use and application of Fire Resistant cables but none of these seem to address the core issue that fire resistant cables where tested to common British and IEC flame test standards are not required to perform to the same fire performance time-temperature profiles as every other structure, system or component in a building. Specifically, where fire resistant structures, systems, partitions, fire doors, fire penetrations fire barriers, floors, walls etc. are required to be fire rated by building regulations, they are tested to the Standard Time Temperature protocol of BS476 parts 20 to 23 (also known as ISO834-1, ASNZS1530pt4, EN1363-1 and in America and Canada ASTM E119-75).

These tests are conducted in large furnaces to replicate real post flashover fire environments. Interestingly, Fire Resistant cable test standards like BS 6387CWZ, SS299, IEC 60331 BS8343-1 and 2, BS8491 only require cables to be exposed to a flame in air and to lower final test temperatures (than required by BS476 pts 20 to 23). Given Fire Resistant cables are likely to be exposed in the same fire, and are needed to ensure all Life Safety and Fire Fighting systems remain operational, this fact is perhaps surprising.

Contrastingly in Germany, Belgium, Australia, New Zealand, USA and Canada Fire Resistant cable systems are required to be tested to the same fire Time Temperature protocol as all other building elements and this is the Standard Time Temperature protocol to BS476pts 20-23, ISO 834-1, EN1363-1 or ASTM E119-75 in USA.

The committees developing the standard drew on the guidance given from the International Fire Prevention Congress held in London in July 1903 and the measurements of furnace temperatures made in many fire tests carried out in the

Jamie Groves is Sales Director for MICC Ltd. headquartered in the UK. MICC and sister company TRM are manufacturers of the World's largest range of Mineral Insulated Cable products.

MICC Ltd. will be exhibiting at Firex International on Stand E85.

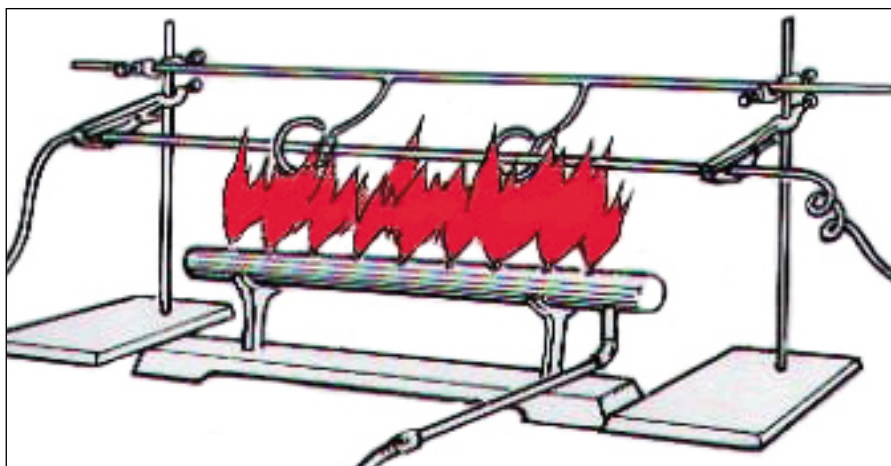
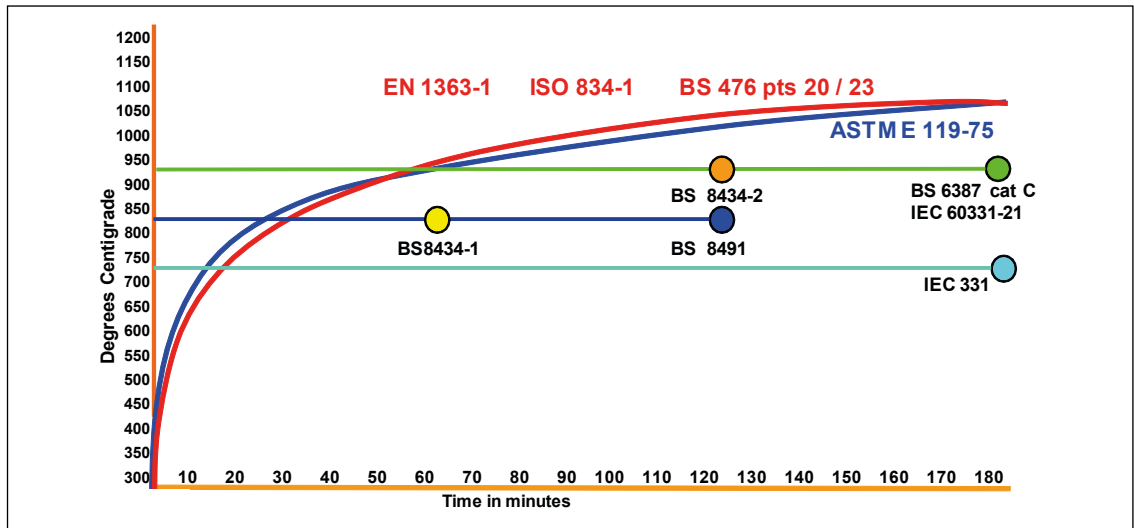


Image courtesy of MICC Ltd.

► **Standard Time Temperature curves**
(Europe and America)
plotted against common
BS and IEC cable tests.



UK, Germany and the United States. The tests were described in a series of “Red Books” issued by the British Fire Prevention Committee after 1903 as well as those from the German Royal Technical Research Laboratory. The finalization of the ASTM standard was heavily influenced by Professor I.H. Woolson, a Consulting Engineer of the USA National Board of Fire Underwriters and Chairman of the NFPA committee in Fire Resistive Construction who had carried out many tests at Columbia University and Underwriters Laboratories in Chicago. The small time temperature differences between the International ISO 834-1 test as we know it today and the America ASTM E119 / NFPA 251 tests likely stemmed from this time.

The curve as we see it today (see graph above) has become the standard scale for measurement of fire test severity and has proved relevant for most above ground cellulosic buildings. When elements, structures, components or systems are tested, the furnace temperatures are controlled to conform to the curve with a set allowable variance and consideration for initial ambient temperatures. The standards require elements to be tested in full scale and under conditions of support and loading as defined in order to represent as accurately as possible its functions in service.

This Standard Time Temperature testing protocol (see graph right) is adopted by almost all countries around the world for fire testing and certification of virtually all building structures, components, systems and elements with the interesting exception of fire resistant cables (exception in USA, Canada, Australia, Germany, Belgium and New

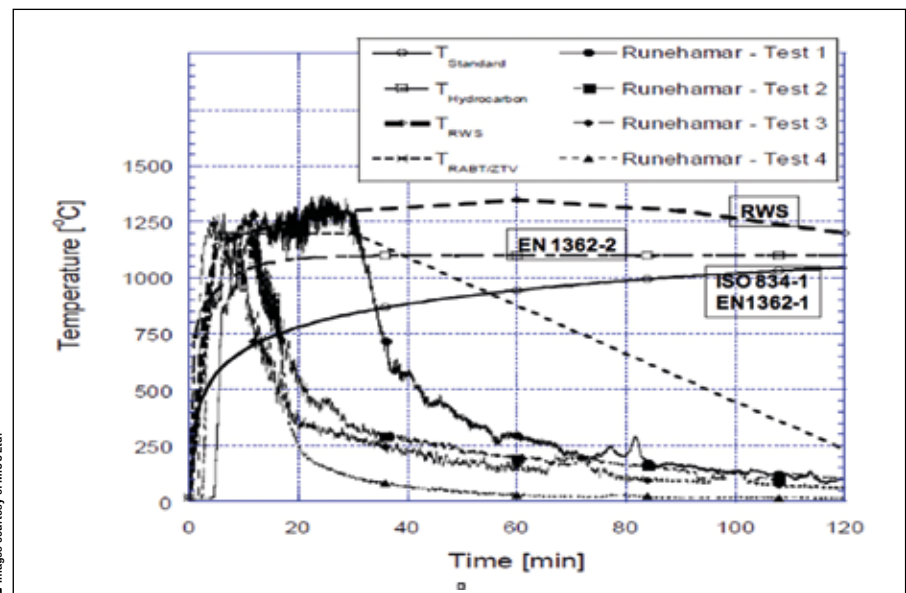
Zealand where fire resistant cable systems are required to be tested and approved to the Standard Time Temperature protocol, just like all other building structures, elements and components).

It is important to understand that application standards from BS, IEC, AS/NZS, DIN, UL etc. where fire resistive cables are specified for use, are only ‘minimum’ requirements. We know today that fires are not all the same and research by Universities, Institutions and Authorities around the world have identified that Underground and some Industrial environments can exhibit very different fire profiles to those in above ground cellulosic buildings. Specifically in confined underground public areas like Road and Rail Tunnels, Underground Shopping centers, Car Parks fire temperatures can exhibit a very fast rise time and can reach temperatures well above those in above ground buildings and in far less time. In

USA today electrical wiring systems are required by NFPA 502 (Road Tunnels, Bridges and other Limited Access Highways) to withstand fire temperatures up to 1,350 Degrees C for 60 minutes and UK British Standard BS8519:2010 clearly identifies underground public areas such as car parks as “Areas of Special Risk” where more stringent test protocols for essential electric cable circuits may need to be considered by designers.

Of course all underground environments whether road, rail and pedestrian tunnels, or underground public environments like shopping precincts, car parks etc. may

▼ **Time temperature profile of tunnel fires using cars, HGV trailers with different cargo and rail carriages.** Graph extract: Haukur Ingason and Anders Lonnemark of the Swedish National Testing and Research Institute who presented the paper at the First International Symposium in Prague 2004: Safe and Reliable Tunnels.



Images courtesy of IMCC Ltd.

exhibit different fire profiles to those in above ground buildings because in these environments the heat generated by any fire cannot escape as easily as it might in above ground buildings thus relying more on heat and smoke extraction equipment.

For Metros Road and Rail Tunnels, Hospitals, Health care facilities, Underground public environments like shopping precincts, Very High Rise, Theaters, Public Halls, Government buildings, Airports etc. this is particularly important. Evacuation of these public environments is often slow even during emergencies, and it is our responsibility to ensure everyone is given the very best chance of safe egress during fire emergencies.

It is also understood today that copper Fire Resistant cables where installed in galvanized steel conduit can fail prematurely during fire emergency because of a reaction between the copper conductors and zinc galvanizing inside the metal conduit. In 2012 United Laboratories (UL®) in America removed all certification for Fire Resistive cables where installed in galvanized steel conduit for this reason:

UL® Quote: "A concern was brought to our attention related to the performance of these products in the presence of zinc. We validated this finding. As a result of this, we changed



Images courtesy of MICC Ltd.

our Guide Information to indicate that all conduit and conduit fittings that come in contact with fire resistive cables should have an interior coating free of zinc".

It would seem that some Standards authorities around the world may need to review the current test methodology currently adopted for fire resistive cable testing and perhaps align the performance of Life Safety and Fire Fighting wiring systems with that of all the other fire resistant structures, components and systems so that Architects, building designers and engineers know that when

they need a fire rating that the essential wiring system will be equally rated.

For many power, control, communication and data circuits there is one technology available which can meet and surpass all current fire tests and applications. It is a solution which is frequently used in demanding public buildings and has been employed reliably for over 80 years. MICC cable technology can provide a total and complete answer to all the problems associated with the fire safety dangers of modern flexible organic polymer cables.

The metal jacket, magnesium oxide insulation and conductors of MICC cables ensure the cable is effectively fire proof. Bare MICC cables have no organic content so simply cannot propagate flame or generate any smoke. The zero fuel-load of these MICC cables ensures no heat is added to the fire and no oxygen is consumed. Being inorganic these MICC cables cannot generate any halogen or toxic gasses at all including Carbon Monoxide. MICC cable designs can meet all of the current and building fire resistance performance standards in all countries and are seeing a significant increase in use globally.

Many engineers have previously considered MICC cable technology to be "old school" but with the new research in fire performance MICC cable system are now proven to have far superior fire performances than any of the newer more modern flexible fire resistant cables.



For further information, go to
www.temperature-house.com





MICC GROUP

Cables for Life

Mineral Insulated Fire Survival Cable

- Zero flame spread
- Zero toxic & halogen gas
- Zero smoke
- Zero oxygen consumption
- Zero heat release
- Zero fire load
- Non ageing > 100yrs
- Waterproof
- Rodent Proof

Office and Factory Address:

Temperature House, Unit 21 Sedling Road,
Wear East Industrial Estate, Washington, Tyne and Wear.
United Kingdom. NE38 9BZ

+44 (0)191 416 8884 | info@trmltd.co.uk
www.temperature-house.com



VADS TO BE HAD!



C-TEC's addressable visual alarm devices and sounders are here!

Introducing C-TEC's new range of UK-manufactured visual alarm devices. Fully compatible with our XFP & ZFP range of XP95/Discovery fire panels, Compact, Hi-Output and Base variants are available, all designed to the relevant parts of EN54 parts 3, 23 and 17 (as indicated)



Compact C-3-8 Ceiling VAD c/w 91dB(A) Sounder

- C-3-8 light distribution
- 14mA alarm current @24VDC
- IP21C rated
- Sounder, VAD-only and Voice Sounder variants also available



Hi-Output W-3-8 Wall VAD c/w 100dB(A) Sounder

- W-3-8 light distribution
- 14mA alarm current @24V DC
- IP33C rated
- VAD-only and Voice Sounder variants also available



C-3-8 Base VAD c/w 91dB(A) Sounder

- C-3-8 light distribution
- Ideal for mounting under fire detectors in corridors, etc.
- Sounder, VAD-only and Voice Sounder variants also available

VAD SYSTEM
DESIGN GUIDE
NOW AVAILABLE
CALL 01942 322744
FOR A COPY



01942 322744



sales@c-tec.co.uk



www.c-tec.co.uk

You're safe with C-TEC



0359-CPR-00446



A Lifetime of Safety

Used in place of traditional compartmentation or sprinkler systems, smoke and fire curtains offer greater flexibility to designers, enabling open plan areas to be greater in size than permitted under the current building regulation recommendations. However, since they often replace other fire safety measures, they play a vital life safety role and must be maintained to BS 524 to ensure they will perform as expected in the event of a fire.



Paul McGarry

Fire and smoke curtains offer a flexible method for creating compartmentation and protecting means of escape. When used as part of a fire-engineered design solution, they become a critical element of that design. As a result, should a curtain fail to deploy to its operational position, the fire-engineered design solution would be compromised.

This is recognised by BS 524-1: *Active fire curtain barrier assemblies*. Specification, which outlines requirements for the design, testing and classification of active fire curtain barrier assemblies. But the standard also recognises that the maintenance of fire curtains throughout their lifetime is just as important as the initial specification.

BS 524-2: *Active fire curtain barrier assemblies. Code of practice for application, installation and maintenance* offers recommendations for the application,

installation and maintenance of active fire curtain barrier assemblies.

Since, in the UK, the Regulatory Reform (Fire Safety) Order (RR(FS)O) places the responsibility on the building occupier to ensure that all fire safety measures are maintained in an operational state at all times, building occupiers should ensure that fire curtains are maintained in accordance with manufacturers' instructions, and should follow the recommendations outlined in BS 524-2 since infringements may lead to prosecution.

Correct installation

On the completion of any building work, be it new build or refurbishment, the building contractor is legally obliged to pass on to the building occupier information regarding the fire safety measures installed within the building.



Paul McGarry is
Service Manager
with Coopers Fire.

Image courtesy of Coopers Fire

The Construction Design and Management (CDM) Regulations 2007 require that all buildings constructed after 1994 should have a safety plan containing details of the installed fire safety provisions, making clear the obligations on a designer concerning fire safety.

Regulation 38 of the Building Regulations makes it mandatory for fire safety information for all buildings constructed after 2007 to be passed on to the building occupier on completion – creating a key link between the building as finished and the building in use.

Regulation 38 applies to any new building or extension to which the RR(FS)O applies, and to any material change of use. For these buildings, the person carrying out the work is required to give fire safety information to the Responsible Person (as defined under the RR(FS)O).

The purpose of Regulation 38 is to assist the Responsible Person in fulfilling their duties in respect to fire safety for the building, allowing them to operate and maintain the building or extension with reasonable safety. The information required relates to the design and construction, and the services, fittings and equipment provided.

For simple buildings that may be as basic as a location plan of fire protection measures and key elements of compartmentation. For complex buildings more detail of the fire safety strategy should be provided, including a design risk analysis, highlighting fundamental assumptions (such as fire load) and any consequences for building management and operation.

It is important to check that the information supplied is valid and correct. Critical systems, such as fire and smoke curtains, should be accompanied by a completion certificate which provides details of exactly what has been installed. This should be checked against the original design specification.

Regulation 7 of the Building Regulations and BS 8524 recommend third party certification as a way to ensure the use of quality products and installers, such as Coopers Fire.

Completion certificates, fire test certificates and any information supplied should be checked against the information on the issuing authority's website to ensure that the product installed matches the design specification.



Image courtesy of Coopers Fire

Ensuring competency

BS 8524 requires that planned inspection, testing and maintenance should be carried out by a 'competent person who is able to check and confirm that barrier assemblies are operating and performing effectively, when required' and that all such tests are accurately logged. Similarly, it recommends that maintenance, servicing and testing are conducted in accordance with the manufacturer's instructions.

Manufacturers, such as Coopers Fire, offer specialist after care packages, tailored to your specific requirements. This is the best way to ensure that fire curtains will

operate as expected in the event of a fire. While many general facilities management firms may offer contracts to maintain all systems and offer local service agreements that ensure a rapid response, many of these contracts do not take into account competence. While they may arrive quickly, they may be unable to solve the problem, as they will not have the necessary parts or expertise.

This is a specialist area so it is important to employ those who understand it and have the technical back up. Coopers Fire products are third party accredited and the company has IFC (International Fire



Regular tests to be undertaken

- Ensure maintenance staff have received training from curtain manufacturer/supplier
- Check that all curtains are free of obstructions within their descent path
- Check that there have been no additions to walls or surfaces in the vicinity or in the descent path, which could interfere with the curtain deployment
- Operate all units in test mode to their fire operational position
- Visually inspect curtains for signs of damage
- Reset system and ensure all curtains retract to their fire ready position
- Enter test time, date and inspector's name on record sheet

Report any operational difficulties or failures to your specialist fire curtain service provider

Consultants) approval for the installation and service of smoke and fire curtains. All of its engineers are factory trained at its in house training facility. Its service vehicles are fully equipped and carry a comprehensive range of spare parts to enable on the spot repairs in most instances.

As a result, its service engineers can offer a quality response that will usually result in immediate problem resolution. If a non-authorized service agent is used it could take time to effect a repair, leaving a site unprotected.

Coopers Fire recommends that if you employ a manufacturer to supply and install a smoke or fire curtain system, it is important to inspect the system when it is commissioned to ensure that the equipment installed matches the specification and to get assurance that the manufacturer provides an effective after-sales service.

Regular checks

There are a series of regular checks recommended by BS 8524. Some of these can be undertaken by the Responsible Person on site, others must be undertaken by a competent engineer as part of a planned maintenance programme.

As part of their regular risk assessments, clients should check for obstructions that might prevent the curtain from deploying, such as alterations to cosmetic finishes, lighting, shelving, sales displays or racking, furniture or temporary displays.

They should also remember that changes to building layout or to activities within it could impact on the installed fire safety systems. For instance, if a wall has been moved or removed then the protection offered by a curtain may be affected.

At least monthly, and on escape routes weekly, the curtain should be operated. If it forms part of a smoke control system

protecting a means of escape, the barrier assembly should be operated in conjunction with the smoke control system, at least every three months.

BS 8524 also recommends that tests are undertaken at the same time each week so that all staff are familiar with the system's operation. It recommends that all maintenance staff should be fully trained by the manufacturer.

The client should undertake a test at least monthly of self-closing devices and automatic release mechanisms via a test switch. They should also check that the sensory detection equipment and self-test facility is functioning correctly.

An inspection should be undertaken by a qualified engineer at least annually. Coopers recommend an annual inspection in domestic premises or small offices but at least 6-monthly inspections for large installations such as shopping malls etc.

Service engineers will check the security of fixings, mechanical parts and linkages to other systems such as the fire alarm and smoke control systems and undertake a range of electrical checks. These include testing the power draw of motors; the charging capacity of batteries and their ability to hold charge; and the operation of the brakes. The batteries perform an essential role as they ensure that the system will operate in a power cut. Batteries are designed to last around two years, but this time can be extended with regular servicing.

Smoke seals also play a vital role. Older silicone seals were prone to vandalism and damage due to obstructions but the more modern systems now use internal seals that are less prone to damage. Any replacement seals should be of the same formulation, dimensions and configuration as that in the manufacturer's fire test report and should be fitted in accordance with the manufacturer's instructions.

Fire curtains offer a flexible and cost-effective alternative to traditional compartmentation. However, they play a vital life safety role and must be adequately maintained to ensure they will perform as expected in the event of a fire. Fire curtains are life-cycle products so, when specifying a system, it is essential to consider the whole package from quality, performance, installation and maintenance, to after sales care.



Image courtesy of Coopers Fire



For further information, go to
www.coopersfire.com

Helping
to protect
the world's
iconic
buildings



Book a RIBA approved CPD Seminar on Smoke and Fire Curtains
www.coopersfire.com



LEADING THE WAY IN FIRE PROTECTION

GLOBAL SOLUTIONS FOR CLEAN AGENT AND INERT GAS WORKSHOP

INTERSCHUTZ HANNOVER
8th - 13th JUNE 2015
VISIT US AT BOOTH B20 HALL 13



UNITS FOR HANDLING, FILLING,
RECOVERING CLEAN AGENTS AND INERT GASES

info@vanzettiequipment.com | www.vanzettiequipment.com



FyreWrap® DPS Insulation just opened the door to improved dryer duct fire protection.



Recent NFPA statistics indicate significant injuries, loss of life and property damage due to clothes dryer fires in residential buildings. At the same time, code requirements for dryer exhaust ductwork in multi-family residences have been difficult to achieve in real-world conditions – until now.

Introducing new FyreWrap® DPS Insulation for dryer ducts and plenums.

FyreWrap® DPS Insulation is an innovative duct wrap that provides a safe and cost-effective means to achieve a 1-hour fire resistance-rated enclosure for routing dryer ductwork through rated wood construction. It utilizes a lightweight, high temperature, low bio persistence fiber blanket specifically designed, UL tested and classified for this

critical application. It also provides code compliant fire protection for combustible items such as plastic pipes in the plenum area. FyreWrap DPS Insulation features a ½", single layer design that is flexible and easy to cut, fabricate and wrap to fit tight spaces, providing time- and cost-savings on many projects.



More information on FyreWrap DPS and our complete line of FyreWrap products is available at www.arcat.com and www.unifrax.com or by calling 716-768-6500.

UNIFRAX
www.unifrax.com



Demonstrating Installation Competence in Europe

Some 15 years after the introduction across Europe of the European Framework Directive on Safety and Health at Work (Directive 89/391 EEC) there remains a general lack of awareness amongst employers and facilities managers of the fire safety duties placed upon them or of how to ensure the competence of those charged with implementing them.



Vicente Mans

Vicente Mans is President of the European Association for Passive Fire Protection.

Adopted in 1989, the OSH “Framework Directive” was hailed as a substantial milestone in improving safety and health at work. The Framework Directive, along with associated Directive 89/654/EEC – Workplace Requirements, introduced a range of measures to encourage improvements in the safety and health of workers at work and laid out minimum safety and health requirements for the workplace.

But, while many managers realise they are responsible for conducting fire risk assessments and ensuring adequate fire safety precautions are in place, many are unaware of the full implications with regards to employing competent contractors to install and maintain fire safety measures, particularly related to passive fire protection.

Although passive fire protection products play a vital role in protecting lives and property in the event of a fire, the importance of appropriate installation and maintenance is seldom reflected in legislation across Europe. There are very few requirements for those who specify, install or maintain PFP products to demonstrate their competence and few formal qualifications available. And, while many European states recommend the use of third party certificated products and installers, such requirements are generally not mandatory.

▼ When work is undertaken, the Responsible Person must ensure that the passive fire protection measures are not compromised.



Image courtesy of Nullfire

Framework Directive requirements

The Framework Directive introduced the concept of a 'Responsible Person' (the definition of which will vary within member states), who can be the employer, any other person who may have control of any part of the premises (occupier/owner), or the person in control of the premises. To fully comply with the Directive, it is essential that he/she ensures that an appropriate risk assessment is carried out and maintained on all premises that he/she is legally responsible for.

This includes creating a safety manual that contains a fire safety policy statement (or fire strategy), a fire safety specification for the building, information relating to regulatory requirements and planned inspection, maintenance and testing schedules and records.

Passive fire protection is the primary safety measure built into the fabric of a building. It helps to ensure the stability and integrity of the building and protect the means of escape in fire conditions. It is therefore one of the key aspects of a fire risk assessment and management.

As a result, where work involving alterations or additions to the fabric of the building is undertaken, the Responsible Person must ensure that the passive fire protection measures are not compromised in any way. Where such work involves the addition, or reinstatement of passive fire protection measures, it is essential that the work is undertaken by experienced and qualified installers, utilising appropriate materials and practices.

Anyone responsible for specifying the materials and/or appointing an installation contractor, is also responsible for ensuring that they can prove competency for the fire protection materials used, or the works to be carried out. A Responsible Person who knowingly ignores advice that leads to a failure in the fire performance of any element of installed fire protection within a building, is likely to be found to be just as culpable as the deficient installer. But how can competency be demonstrated?

Third party certification

The European Association for Passive Fire Protection (EAPFP) strongly advocates the use of third party certification of contractors for the installation of passive fire protection products. By specifying a third party certificated company, managers

can be assured of the competency of the contractor, since a third party has verified that installations are satisfactory. The process is undertaken by a mixture of audits of records and randomly selected site visits, by the third party, at which workmanship is checked for compliance.

A competent person is one who can demonstrate to a third party that they have the expertise, skills and commitment for the professional installation of passive fire protection products. Proof of competency can be demonstrated by working for a third party certificated installer under the conditions of that scheme; demonstrating their skills to a certification body running an accredited competent persons scheme in the installation of passive fire protection; or working for a company operating a 'company based' competent person scheme certificated by an accredited certification body.

Accredited certification bodies are those which are signatories to the European Co-operation for Accreditation (EA), the International Accreditation Forum (IAF) and the International Laboratory Accreditation Co-operation (ILAC).

EAPFP survey

A recent survey conducted by the EAPFP highlights that while there are a range of voluntary third party certification schemes for passive fire protection products and installers, they are generally not mandatory. Furthermore, there are few formal qualifications or registration schemes for passive fire protection installers.

■ Austria

In Austria there is no registration scheme for installers but there is a mandatory qualification process. Installation is regulated under commercial law for heating, cooling, acoustics and fire protection. There is a regulation OENORM H6013 for the installation and inspection of fire dampers and smoke control dampers and there are initiatives to develop further schemes.

■ Belgium

In Belgium there is a voluntary registration and qualifications scheme for fire door installers, which is applicable on a regional basis. The national bodies are working together on a voluntary qualification system for installers of passive fire protection. The first scheme will be for fire resistant penetrations.

■ Denmark

In Denmark there is no registration scheme or qualification process for installers of passive fire protection.

The Danish Buildings Regulation and its Guide (Eksempelsamlingen) describes where and which form passive fire systems should be, but does not place any detailed requirements on how it should be maintained, despite stating that it should function for the whole life of the building.

There is no requirement for mandatory third party certification, although all products shall be CE-marked due to CPR (where appropriate). The Fire Safety committee of the Danish Trade Organisation for Safety and Security has established a subcommittee for Passive Fire Protection which is investigating the development of a voluntary certification scheme for installations.

■ France

In France, there is a voluntary qualification process and regulations that apply throughout the country.

■ Germany

In Germany, there is regulation for the installation and maintenance of passive fire protection products and guidance which is applicable throughout the country. But there is no registration scheme for installers of passive fire protection products. There is a voluntary qualification process for installers of passive fire protection, which is applied on a company (private level).

■ Ireland

In Ireland, the importance of ensuring that fire safety installations are fit for purpose was highlighted by a High Court ruling related to the Priory Hall Apartment Complex. The ruling resulted in the eviction of 249 residents from the complex, due to fire safety concerns related to the building's construction. It prompted an overhaul of the Irish Building Regulations.

The implementation of the Building Control (Amendment) Regulations 2013 on the 1st March 2014, backed up by a revised Technical Guidance Document B, creates a significantly more onerous environment for all involved in the specification, design, installation, certification, inspection, management and maintenance of passive fire protection in buildings.

The new regulations introduce Assigned

► The reinstatement of passive fire protection measures should be undertaken by experienced and qualified installers, utilising appropriate materials.

Certifiers, who will inspect building works at key stages during construction, with both the Assigned Certifier and the builders both required to certify that a finished building complies with the requirements of the building regulations.

■ Italy

There are no existing registration, qualifications or regulations but there are schemes being developed by Avis Federchimic.

■ Netherlands

In the Netherlands there is no registration scheme for installers of passive fire protection products but there is a voluntary qualification process for installers of passive fire protection available from product manufacturers. This is applied throughout the country on a company (private) level. There is no regulation for the installation and maintenance of passive fire protection products but there is guidance which is applicable throughout the country. There is a voluntary scheme being developed.

■ Norway

In Norway there is a mandatory scheme for installers of passive fire protection products. This forms part of the legislation and places professional responsibility for the passive fire protection in new buildings on the installing company. There is also a voluntary qualification process with a new standard developed by the BFO, based on NS ISO 9001-2008.

■ Spain

There are no existing registration, qualifications or regulations. There is regional guidance from the Canary Islands Government Ministry of Commerce Industry and New Technologies General Directorate of Industry and Energy. Tecnifuego-Aespi offers guidance on installation, and maintenance of passive fire protection systems.

However, in 2014, the Department for Housing, part of the Ministry for Construction, mandated the team responsible for regulations on fire safety in buildings to develop an installation code.



Image courtesy of Nullfire

The Spanish association of paint and ink manufacturers (ASEFAPI), CS Pasiva en Tecnifuego (the Technical Committee for Passive Fire Protection within the Spanish association Tecnifuego-Aespi) and CTN 48 (the Technical Committee for standardization in AENOR in Spain) are working to develop a draft, which includes installation guides for different products, and is complemented by the recent publication of a new standard on appropriate maintenance and inspection regimes (UNE 192005). The Code will also include necessary conditions for qualification as an installer of passive fire protection.

■ UK

There is no formal registration scheme but there are several voluntary schemes for installers with a good take-up in several areas. The only formal registration scheme is the CSCS card that all construction site operatives are required to have to gain access to a commercial site. For passive fire protection, the CSCS card is for a skilled operative. However, it is not mandatory that the skilled operative card is obtained.

There is a voluntary qualifications scheme leading to an NVQ Level 2/3 qualification in passive fire protection. In addition there is a voluntary qualification scheme for fire doors, the Competent Approved Fire Door Inspectors (FDIS) scheme. The UK Industry body, the

Association for Specialist Fire Protection (ASFP) representing the passive fire protection sector now offers a new ASFP training scheme which aims to improve the knowledge of those in the supply chain involved in the installation of passive fire protection as well as raising the awareness of those involved in the design, supply and maintenance of passive fire protection.

Campaigning for improvements

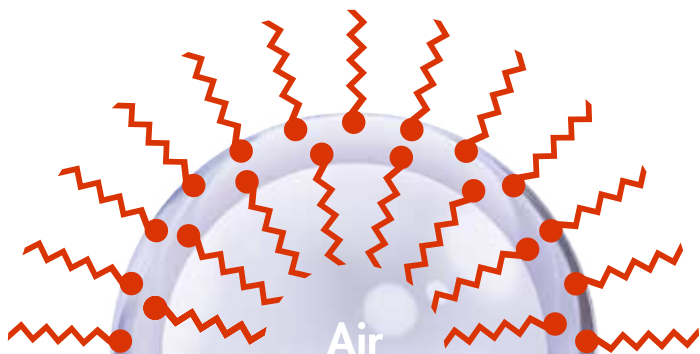
Provided that those responsible for design, construction and maintenance ensure that the fire provision within their remit of responsibility is undertaken in an appropriate manner, using competent installers, then it is reasonable to assume that the development and spread of a fire will be held to a minimum.

The EAPFP survey has identified that there appears to be little appetite across Europe to insist on minimum standards for the installation of passive fire protection. The Association aims to improve installation standards and is calling for European states to recognise the need for specialist skills for the installation and maintenance of passive fire protection by requiring installers to join third party certification schemes to provide proof of competence. EAPFP would like to help member states by seeking to take action at a European level.



For more information, go to
www.eapfp.com

Fatal Attraction



Fluorine-free foam bubble

F3 Foam **attracts** hydrocarbon fuels

 **Hydrocarbon surfactant**
(Hydrocarbon tails are fuel-loving)

FORCEFUL F3 APPLICATION:

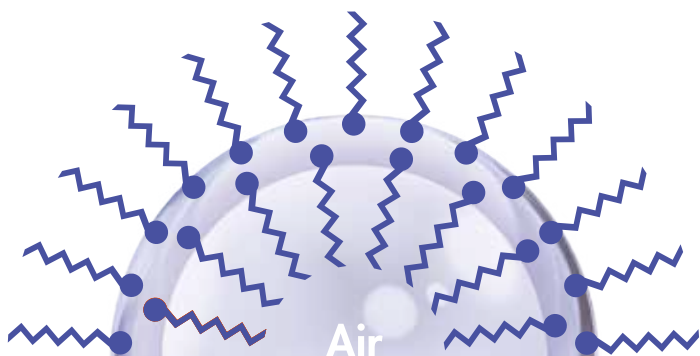
- Foam attracts fuel
- Foam becomes flammable
- Foam has reduced performance
- Foam use is increased

Need proof? See F3 foams on fire:



FORCEFUL AFFF APPLICATION:

- Foam repels fuel
- Foam is NOT flammable
- Foam has superior performance
- Foam use is reduced



Fluorinated foam bubble

AFFF Foam **repels** hydrocarbon fuels

 **Fluorosurfactant**
(Fluorocarbon tails are fuel-hating)

One year ahead of the US EPA 2010 / 2015 PFOA Stewardship Program deadline, Dynax only manufactures high purity C6 Fluorosurfactants, Foam Stabilizers and optimized High Performance Blends meeting the toughest fire performance specifications (including Mil F) at traditional / reduced Fluorine Levels.

DYNAX CORPORATION
PO Box 285, Pound Ridge, NY 10576 USA
T 914 764 0202 techinfo@dynaxcorp.com
F 914 764 0553 www.dynaxcorp.com

dynax
FLUOROchemicals

Reducing Risk: Saving Lives and Assets

Fires and explosions, and the consequences to lives and assets, are a major safety concern in the process and oil and gas industries. Designing key safety critical elements (SCEs) to withstand the consequences of gas explosions and hydrocarbon fires, as well as reducing the risk of escalation is an important aspect in process plant design.



Camille Azzi

It is not always possible to completely eliminate the risk of catastrophic events. Therefore, it is important to effectively protect personnel from those events and reduce risk of escalation so the event is contained to a single fire area and does not spread to other areas or the whole installation.

Being too conservative in consequence modelling does not always result in safer designs, as the positive effect of some highly effective mitigation measures might be masked by the simplification and conservatism. During the past 30 years, the use of advanced Computation Fluid Dynamics (CFD) for explosion simulation especially for offshore installations has become the industry standard.

The embracing of similar advanced tools for fire related consequence modelling has been much slower. With the advent of new software tools, ever-faster desktop computers and improved user interfaces, more advanced fire simulation models are becoming more accessible to a wider range of fire safety engineers. Thus, CFD simulations are becoming a viable option for many aspects of fire safety engineering, including escape route studies and Passive Fire Protection (PFP) optimisation.

PFP is the use of low thermal conductive material, usually epoxy or special concrete... delaying the temperature rise in the protected structural elements.

Fires on Offshore Facilities

Several different types of hydrocarbon fires can be distinguished on offshore

facilities. Pool fires occur as a result of ignition of liquid fuel spill and can be either a static pool or a flowing liquid. If the released liquid is at high pressure, the resulting fire is known as a jet spray fire. Following a gas leak, an immediate ignition would result in a gaseous jet fire. If the ignition is delayed, the released gas would be dispersed and mixed with air resulting in a flash fire or possible explosion.

The most common fires that PFP is employed to protect against are pool and jet fires. These fires can engulf the system – structure or equipment – in a flame or expose it to high radiative heat fluxes for prolonged periods of time.

PFP on Offshore Facilities

Passive fire protection, unlike active fire protection, does not need any external activation means or input from personnel. The common PFP material used varies from mineral based such as rock wool, organic resin based – intumescent coatings – and composites.

The use of PFP in the oil and gas industry, particularly on offshore facilities, has many advantages as well as disadvantages. The aim of applying PFP to structure and process equipment is to allow safe evacuation time of personnel and for firefighters to deal with the fire. This is particularly crucial on offshore facilities where escape and evacuation is more critical compared with onshore facilities. Prevention is done by maintaining containment of additional process equipment and isolating the fire to a single fire area.

Key structural elements also need to be protected from fires to prevent

Camille Azzi is Senior Consulting Engineer at GexCon.



loss of structural integrity, which could further add to the spread due to falling heavy objects or even structural collapse of the whole installation. By preventing escalation, the PFP implementation helps protect people and assets. However, PFP increases the risk of corrosion and leak frequencies from process equipment. PFP also increases the dimensions of equipment, which causes a rise in explosion design loads. The inspection and maintenance of PFP requires an increased number of personnel in the process areas and creates a higher potential of ignition sources and increase in the number of exposed people.

Excessive use of PFP on structure and equipment has the potential of making the fire and hot gases significantly hotter than without it. Adding PFP also increases the total weight of the installation and increases the installation and maintenance costs of the facility. Therefore, the optimal, risk-based and proportionate use of PFP is required to provide the necessary protection.

PFP Implementation

The definition of the fluctuating heat load expected on a system – structure or equipment – can be useful in assessing the need for PFP. The reasoning is

that there is no need to apply high heat load PFP in areas where these loads will not occur. While there are a number of standardised methodologies for determining risk-based explosion dimensioning loads (for example, Norsok Z-013), there currently are no standardised detailed methodologies for defining changing heat loads in a similar way.

A simplified approach can be followed to define the heat loads on a system. The approach starts with a screening of the areas of concern to identify the critical

flammable fuel inventories / SCEs. On an offshore facility, these are normally the inventories containing the hydrocarbons. Assessment of the type of fire expected is done by investigating the representative mixture in the inventory and the conditions of containment. In process areas, the operating pressure in most inventories is usually relatively high and therefore jet fires are most common.

A first screening of the inventory volumes is conducted to determine if a fire occurs close by an SCE is large enough or is present for a critical period of time.



Images courtesy of www.GaxCon.com



For instance, a leak from a hydrocarbon segment given the segment characteristics – volume, pressure, temperature, representative mixture – can be evaluated to determine whether a leak rate above a cut-off value (0.1 kg/s for example) could happen for at least five minutes.

The effect of isolation and depressurising of the segment is taken into account in the evaluation. In addition, the leak frequencies of the segments can be included to evaluate the frequency of leak and potential fire occurrence from different segments. After the screening stage, areas with potential critical fires that could expose the SCEs to hazardous situations are subject to further consequence analysis to define the expected heat loads on the system. Specific system targets in the area are identified such as firewalls, separator vessels and shutdown valves. Fire scenarios are set-up to expose the selected targets to representative heat loads.

The fire scenarios are simulated with a suitable CFD consequence modelling software that has been validated for high-momentum gas jet fires such as FLACS-Fire. CFD simulations tools are used rather than simplified models and empirical correlations in order to account

for the various scenario variables such as fire obstruction by geometry, leak characteristics and weather conditions.

Other more advanced programmes that simulate the material response to heat loads can be used for this purpose (more advanced non-linear finite elements analysis). For vessels and pipes, it is assumed that the running medium would absorb part of the heat loads applied on the target and thus dissipate more of the received heat radiation. The extent of this reduction will depend on the flow rate inside the pipe. Therefore, time-dependant heat transfer models are to be used for this purpose. Heat generation due to fire fluxes will compete with heat dissipation due to flowing medium until the fire decays.

Steel temperature is monitored during the heat generation and dissipation process to detect whether the steel temperature would reach critical values. In any of the described methods, where the heat transfer calculations indicate a failure in a given time range which is not compatible with the safety function and performance requirement, the PFP is implied or increased and the calculations are repeated until the system is observed to withstand the expected heat loads.

The optimisation of PFP application

would significantly reduce both installation and maintenance costs.

Balancing Act

The importance of adequate PFP implementation on offshore facilities is undisputable. Prevention of escalation for at least sufficient time to allow safe evacuation is a minimum requirement with respect to safety.

The extensive use of CFD allows the inclusion of various affecting parameters such as fire interaction with geometry, release characteristics and weather conditions. The calculated incident heat loads are then used to assess whether the system would withstand the heat without protection or if implementation and where the increase of PFP is required according to a specific performance requirement. This optimisation of implementation of PFP provides an important balance between the benefits and drawbacks.

The costs of installation and future maintenance of PFP in areas where it does not contribute to safety can be reduced and limited significantly, while system protection can be achieved while limiting the disadvantages.



For further information, go to
www.GexCon.com

GLOBAL FIRESTOP SOLUTIONS

FOR AN EVOLVING WORLD

STI OFFICES:

North America • Latin America • Europe
Middle East • China • South East Asia • India

OTHER
NOTABLE
PROJECTS

THE MOST
UL® Firestop Systems

STI - 1,300+

TOP OF WALL - SPEEDFLEX®

**Specified
Technologies
Inc.**
THE FIRESTOP AUTHORITY

An ISO9001 Company



Celebrating 25 Years of Firestop Excellence



CLEVELAND CLINIC, USA
A TOP MEDICAL CENTER IN THE WORLD



KAUST - JEDDAH, KSA
INSPIRING A NEW AGE OF SCIENTIFIC ACHIEVEMENT



CERN - SWITZERLAND
WORLD'S LARGEST PARTICLE PHYSICS LABORATORY



- Stanford University Medical Center - USA
- Mayo Clinic - USA
- Hôpitaux Universitaires de Genève

- Al Dar Headquarters Abu Dhabi
- Rolex - Switzerland
- Pentagon - USA

- Charles de Gaulle Airport - Paris
- Singtel Datacenter - Singapore
- Substations - Qatar

- AL Ain University - UAE
- Harvard University - USA
- Princeton University - USA

At STI, we are committed to delivering the most comprehensive line of innovative and reliable firestop solutions across a broad range of segments and industries worldwide. With best-in-class service and support, we are the preferred choice of specialists. Contact us today to experience the STI difference.

www.stifirestop.com

& FIRESTOP SPRAY



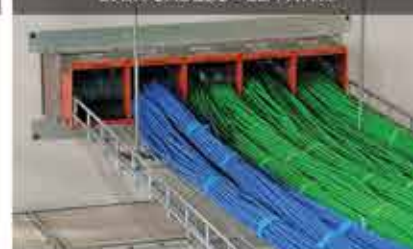
CABLE TRAY - FIRESTOP MORTAR & PILLOWS



PLASTIC PIPE - FIRESTOP SEALANT



DATA CABLES - EZ-PATH®



CE-marking of Cables – the Final Countdown has Started

The fire properties of cables are of great importance from a fire safety perspective. As a result, cables have been included in the classification system under the European Construction Products Regulation (CPR), following SP's proposing of the classification system to the European Commission.



Fredrik Rosen



Johan Post



Marina C. Andersson

Fredrik Rosen is Marketing and Sales Manager with SP Fire Research.

Johan Post is Project Leader Cables in the Department of Fire Dynamics/Reaction to Fire at SP Fire Research.

Marina C. Andersson is Quality Manager and Project Leader in the Department of Fire Dynamics/Reaction to Fire at SP Fire Research.

The European CEMAC project (CE-Marking of Cables), for which SP Fire Research has provided technical management, has recently been concluded. The results of the work will significantly reduce the volume of testing required for CE-marking of cables in Europe according to the CLC/TS 50576 standard for extended field of application (EXAP).

The road to CE-marking

The objective of the CPR, which regulates building products on the European market, is to ensure the free movement of all construction products within the European Union with respect to the essential health and safety requirements. When it comes to cables, safety in the case of fire is the only requirement. An additional objective of the regulation is to standardise the manufacturing of construction products and guarantee their unlimited use within the EU.

The CPR consists of four main elements:

- A system of harmonised technical specifications
- An agreed upon system of attestation of conformity for each product family
- A framework of notified bodies
- The CE-marking of products

The Regulation is not intended to harmonise regulations/building codes, as EU Member States are free to set their own requirements regarding the performance of works and, therefore, products. Instead, its objective is to harmonise the methods of testing, declaration of product performance values, and conformity assessment. The choice of value for intended use (fire technical classifications) is left to the regulators of each Member State.

When a construction product is covered by a harmonised standard, the manufacturer is required to draw up a declaration of performance (DoP) when it is placed on the market. This means that the manufacturer is responsible for the conformity of the construction product to the DoP.

For any construction product to which a harmonised standard applies, the CE-marking should be the only sign or symbol visible on the product. This marking visually signifies that the product conforms to the specifications of the harmonised standard it is covered by.

In order to obtain a CE-marking for cables, there are certain steps and procedures that the manufacturers must go through and comply with. These are described below.

The Product Standard EN 50575 will make CE-marking possible

In September 2014, the CENELEC TC 20 (European Committee for Electrotechnical Standardization, Technical Committee 20) published a product standard for cables; EN 50575 (Power, control and communication cables. Cables for general applications in construction works subject to reaction to fire requirements). EN 50575 is expected to be published in The Official Journal of the European Union (OJ) in mid-2015. The OJ is the official compendium of EU legislation (L series) and other official documents of the EU institutions, bodies, and agencies (C series and its supplements).

This means that all cable manufacturers who intend to sell cables for use in permanent installations in buildings in Europe must obtain CE-marking for their products. Once the standard is published in the OJ there will be a transitional period, which has not yet been defined.

Extended Field of Application rules (EXAP)

The EXAP standard CLC/TS 50576 allows a limited number of cables belonging to a larger group ('family') of cables to be fire-tested. The results of these tests are interpolated for the classification of part of, or the entire, cable family. This eliminates the need for the extensive testing of the individual cables of a cable family that can be expected to have the same fire behaviour. In most cases, EXAP is a prerequisite for CE-marking.

In SP's process, cables are reviewed and grouped by product families. Based on the EXAP rules and whether a "Specific" or "General" EXAP rule is being worked with, two or three cables from each family are chosen for type testing and specified in an EXAP report.

Compulsory fire test standards

Manufacturers must test the cables specified in their EXAP report in accordance with two compulsory standards:

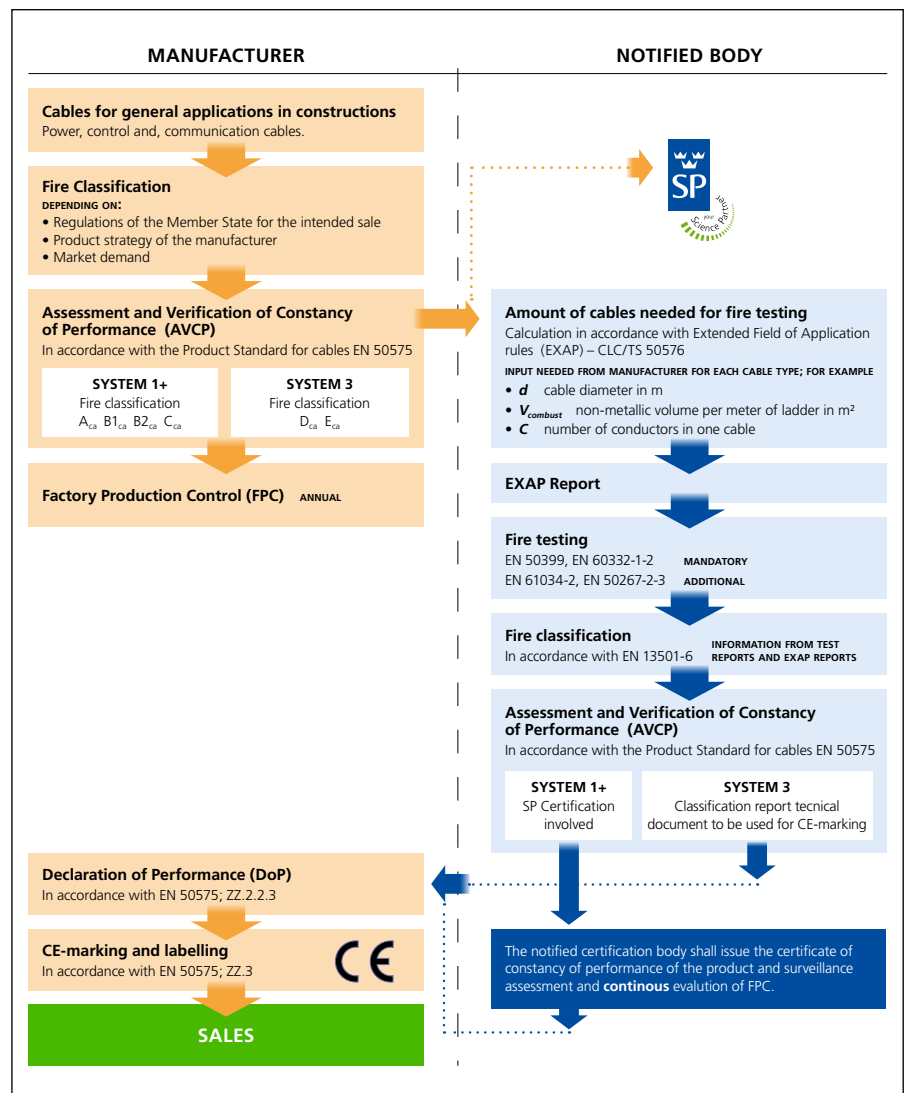
- EN 50399 (Common test methods for cables under fire conditions – Heat release and smoke production measurement on cables during flame spread test). This is the most commonly used fire test for cables. Measured quantities are Flame Spread (FS), Heat Release Rate (HRR), Total Heat Release (THR), Fire Index Growth Rate (FIGRA), Smoke Production Rate (SPR), and Total Smoke Production (TSP). Toxic gas species can also be measured using Fourier Transform Infrared Spectroscopy (FTIR).
- EN 60332-1-2 (Tests on electric and optical fibre cables under fire conditions – Test for vertical flame propagation for a single insulated cable). In this test, a flame with 1 kW of heat output is applied to a single cable. The measured quantity, H, is the length of the combusted or charred section of the cable.

Fire classification

There are seven fire classes specified in EN 50575: Class A_{ca} relates to non-combustible products, e.g. cables with ceramic insulation. Class B1_{ca} refers

to products which are combustible, but which contribute least to the spreading of fire, while B2_{ca} and C_{ca} represent products which may spread a fire to some degree. Products in Class D_{ca} have fire characteristics similar to those of ordinary wood, while E_{ca} consists of products that are not easily ignited by a small flame, but for which there are no requirements with regard to heat and smoke release. F_{ca} indicates that no performance class has been determined. Comparing this system with that for surface-covering materials, in which Euroclass A is non-combustible and Euroclass D represents wood, it can be seen that the two run parallel.

The product strategy of the manufacturer, as well as the demand of the market, guides the manufacturer as to what fire technical class to obtain. In addition, and as discussed above, each European country's building code will specify which fire classifications are required.



Classification report

The results of the fire tests are presented in reports, which are then used as a basis for a classification report in accordance with EN 13501-6 (Fire classification of construction products and building elements. Classification using data from reaction to fire tests on electric cables).

The classification report provides the manufacturer with the basis for the CE-marking of cables in accordance with EN 50575.

The FIPEC (Fire Performance of Electric Cables) and CEMAC (CE-Marking of Cables) projects

SP was responsible for proposing the classification system for reaction-to-fire properties to the European Commission, based on the work carried out by the FIPEC and CEMAC projects. The CEMAC project included comparison calibrations of the EN 50399 testing method, along with certain technical improvements which were subsequently incorporated into CENELEC's

standardisation work. Much time and effort was put into the calibration of test equipment around Europe, as well as the calculation methods for the presentation of test data. Perhaps the most important part of the work, however, was the production of Extended Field of Application rules (EXAP).

This allows a limited number of cables belonging to a larger group ("family") of cables to be fire-tested, with the results being interpolated for the classification of part of, or the entire, cable family. This eliminates the need for the extensive testing of the individual cables of a cable family that can be expected to have the same fire behaviour. In most cases, EXAP is a prerequisite for CE-marking.

Which AVCP system will apply to the product?

EN 50575 specifies which Assessment and Verification of Constancy of Performance (AVCP) system should be applied to the products from each fire class, along with the responsibilities of the manufacturer and the Notified Body (NB) with regard to the CE-marking process.

For System 1+, the manufacturer shall carry out:

- Factory production control
- Further testing of samples taken at the factory in accordance with the prescribed test plan

For System 1+, the notified product certification body shall issue the certificate of constancy of performance of the product on the basis of:

- Determination of the product-type on the basis of type testing (including sampling), type calculation, tabulated values, or descriptive documentation of the product
- Initial inspection of the manufacturing plant and of factory production control
- Continuous surveillance, assessment, and evaluation of factory production control
- Audit-testing of samples taken before placing the product on the market

For System 3, the manufacturer shall carry out factory production control, and the notified testing laboratory shall carry out determination of the product-type on the basis of type testing (based on sampling carried out by the manufacturer), type calculation, tabulated values, or descriptive documentation of the product.

Use of facilities outside of the testing laboratory of the notified body

Regarding the use of facilities outside of the testing laboratory of the notified body, Article 46 of the CPR states that: "under certain conditions notified bodies [are allowed to] carry out tests using testing facilities outside the testing laboratory of the notified body only on request of the manufacturer". Thus, Article 46 makes it possible for SP, in its capacity as a Notified Body (NB), to carry out tests using e.g. the manufacturer's laboratory and testing equipment rather than its own, as SP will be among the NBs "specially designated as competent to work away from their own accredited test facilities".

In such a scenario, it is crucial that the NB acts in an independent and impartial manner. The NB may be assisted by personnel from the manufacturer's organisation, but "[t]he use of facilities outside the testing laboratory of the NB must not in any way compromise the Notified Body's compliance with EN ISO/IEC 17025".

In short, Article 46 states that the NB has full responsibility for the tests, test results, and reporting of the tests performed at the manufacturer's own laboratory.



PROTECTOWIRE® FireSystems

Global Leadership in Linear Heat Detection for Over 75 Years

- Detectors for every application
- Easy, low cost installation
- Continuous long length coverage
- Suitable for use in hazardous locations & harsh environments
- Alarm point location

Type EPC - Multipurpose
Activation Temp. 68°, 88°, 105°, 138°, 180° C

CTI Series
Patented Multi-criteria Detection Technology, Multiple Alarm Temps.

Type XCR - Superior Abrasion & Chemical Resistance
Activation Temp. 68°, 88°, 105°, 138°, 180° C

Type XLT
Excellent Low Temp. Properties
Activation Temp. 57° C

PFS Series Fiber Optic Sensor Cable
Continuous Temp. Monitoring
Multiple Alarm Set-points

See us at Firex Booth #C105

Protectowire, the first name in linear heat detection.

The Protectowire Company, Inc.
60 Washington Street
Pembroke, MA 02359-1833 U.S.A.
781-826-3878; www.protectowire.com
An ISO 9001:2008 Registered Company



Fire resistance

There is also ongoing standardisation work within CENELEC with regard to the fire resistance of cables. The main standard being discussed is prEN 50577 (Electric cables – Fire resistance test for unprotected electric cables (P classification)). Its purpose is to evaluate the ability of a cable to maintain electrical circuit integrity throughout a defined time period, during exposure to fire under the conditions of the EN 1363-1 standard time/temperature curve and when installed in standardised, representative conditions. SP currently offers tests according to this preliminary standard. When prEN 50577 is formally published, fire resistance will also be included in the classification system under the CPR. As a result, it will be a compulsory requirement for cable manufactures to fulfil.

The future

At first glance, the system's specifications might appear to be somewhat difficult to fully meet. SP is aware of this, however, and is ready to assist cable manufactures, by grouping cables in product families in accordance with the EXAP standard CLC/TS 50576. This will considerably reduce the number of tests needed. SP can also guide cable manufacturers through the European system, and assist cable manufactures in maximising product approvals through reducing the number of tests.

Many cable manufactures have started the process of fire testing their products, in order to be prepared for the publishing of EN 50575. Doing so will ensure that CE-marking certificates may be efficiently and swiftly issued.



For further information, go to
www.sp.se/cables



Come and see
us at FIREX Int. Stand
H160

The only beam that basks in the sun!

Fireray® 3000 End-to-End
Optical Beam Smoke Detector

- Patented light cancellation technology cancels unwanted light
- Protects large spaces from 5-120 Metres
- Fewer false alarms and false readings
- Low installation costs



T +44 (0) 1462 444 740
E sales@ffeuk.com
W www.ffeuk.com

Marine Applications of Clean Agents

Of all the perils at sea, one of the most dangerous is fire. Difficult to deal with and potentially deadly, a fire at sea leaves the crew and passengers caught between two unforgiving elements.



Mark L. Robin PhD

There's no local fire department to call and it is up to the crew to find, control and extinguish the fire. In addition to the requirements associated with onshore fire protection systems, shipboard fire protection systems must be designed so that safe navigation can be maintained in the event the fire protection system is activated.

Due to its unique combination of properties, Halon 1301 (CF₃Br) served for over 30 years as a near-ideal fire protection solution in numerous applications, e.g., the protection of engine compartments in both small and large watercraft. Halon 1301 is characterized by high fire suppression efficiency, low toxicity, low chemical reactivity, electrical non-conductivity, and long term storage stability. However, due to its implication in the destruction of stratospheric ozone, Halon 1301 production was halted on January 1, 1994. As a result, clean fire protection agents characterized by negligible environmental impact, such as FM-200 and Inergen – which retain the

desirable properties of high efficiency, low toxicity, low chemical reactivity, electrical non-conductivity and high stability – have been developed to replace Halon 1301 in challenging applications such as the protection of marine vessels.

Marine Fire Hazards

Fire hazards on ships correspond to the three major occupancies common to all ships: (1) engine compartments and their related auxiliary equipment, (2) cargo holds or tanks, and (3) accommodation and service areas. Typical marine vessel applications of the clean fire protection agents include the protection of

- Engine compartments/machinery spaces.
- Generator rooms.
- Pump rooms.
- Flammable liquid storage and handling areas.
- Paint lockers.
- Control rooms.
- Electronic equipment rooms.



Mark L. Robin is Senior Technical Services Consultant, Specialty Fluorochemicals at DuPont Chemicals and Fluoroproducts.

Images courtesy of Mark L. Robin

A key application of the clean agents in marine vessels is the protection of engine compartments. Pleasure craft and small commercial boats typically employ gasoline for propulsion engines and onboard generators. The primary fire hazard in the engine compartment of commercial marine vessels is the fuel oil employed to run engines or boilers, which is usually either marine diesel fuel or the heavy oil known as Bunker C. The majority of engine compartment fires are caused by broken fuel or lubrication oil lines spraying onto hot surfaces such as engine casings or exhaust manifolds. Engine compartment fires are also caused by short circuits or failures of electrical components or devices located in or adjacent to the engine room.

Engine compartment fires are Class B fires, and characterized by very rapid fire growth. This rapid fire growth results in the production of potentially lethal levels of heat and combustion products (e.g., CO and CO₂) within a very short time period, and it is therefore critical that the fire protection system provide extinguishment in as short a time as possible. Clean agent systems provide both rapid detection and rapid extinguishment and are able to extinguish these rapidly growing Class B fires while they are still in their incipient stage, limiting the amount of heat and toxic combustion products produced, and ultimately limiting the amount of damage to the engine compartment and the associated repair costs.

In addition to providing rapid extinguishment with minimal cleanup requirements in the protection of engine compartments, HFC and inert gas based clean agents such as FM-200 and Inergen are suitable for the protection of the various flammable solvents encountered in onboard flammable storage and handling areas. Both agents are chemically unreactive and compatible with solvents. The marine environment is by nature characterized by high humidity conditions, and their lack of chemical reaction with water renders the HFC and inert gas clean agents appropriate for marine fire protection applications.

Marine Clean Agent Regulations

SOLAS 74 – the SOLAS (Safety of Life at Sea) Convention is regarded as the most important of all international treaties

Table 1
Fire Protection Requirements under 46 CFR

Vessel Class	Subchapter	Parts	Fire Protection Requirements
Uninspected	C	46 CFR 24-28	46 CFR 25
Tank	D	46 CFR 30-39	46 CFR 34
Passenger	H	46 CFR 70-89	46 CFR 76
Cargo & Miscellaneous	I	46 CFR 90-105	46 CFR 95
Small Passenger, >150 passengers	K	46 CFR 114-124	46 CFR 118
Small Passenger, < 100 gross ton	T	46 CFR 175-187	46 CFR 181
Oceanographic	U	46 CFR 188-196	46 CFR 193

related to the safety of marine vessels. The first version of the SOLAS Convention was adopted in 1914 in response to the Titanic disaster, and the Convention in force today is referred to as SOLAS 74. Fire-related requirements for marine vessels are described in SOLAS Chapter II-2, Fire Protection, Fire Detection and Fire Extinction, which includes detailed fire safety provisions for all ships as well as specific measures for passenger ships, cargo ships and tankers. Fixed gas fire extinguishing system requirements are described in SOLAS Chapter II-2, Regulation 5.

IMO/MSC Circular 848 – the IMO/MSC/ Circ.848, Revised Guidelines for the Approval of Equivalent Fixed Gas Fire-Extinguishing Systems, as Referred to in SOLAS 74, for Machinery Spaces and Cargo Pump Rooms, covers requirements

for the design of fixed gas fire extinguishing systems on marine vessels, and includes required fire tests which must be passed in order to obtain IMO approval.

NVIC 6-72 – the Navigation and Vessel Inspection Circular NVIC 6-72 describes the basic design of marine suppression systems, including cylinder storage locations, system controls and instructions, and system design review. USCG approved methods for FM-200 systems are also detailed.

NVIC 3-95 – Navigation and Vessel Inspection Circular NVIC 3-95 outlines the required procedures for inspection and testing of system storage cylinders.

NFPA 2001 – Chapter 8, “Marine Systems,” of NFPA 2001 Standard on Clean Agent Fire Extinguishing Systems



Image courtesy of Mark L. Robin

(2015 edition) describes the requirements for the design and installation of clean agent fire protection systems on marine vessels, including system cylinder storage locations, control systems, and system design and test criteria. Many of the requirements of NFPA 2001, Chapter 8 are derived from the SOLAS, NVIC, and IMO requirements indicated above.

46 CFR – for marine vessels operating within US waters, Title 46 of the Code of Federal Regulations (46 CFR) describes vessel requirements. Vessels are divided into seven classes; Table 1 indicates the sections of 46 CFR detailing the fire suppression requirements of the seven classes of vessels.

Clean Agent Marine Applications

The HFC and inert gas based clean fire protection agents preserve the desirable properties of Halon 1301 – high efficiency, low toxicity, low chemical reactivity, electrical nonconductivity and high stability – and in addition are characterized by negligible environmental impact. These properties, along with the rapid detection and rapid extinguishment characteristic of clean agent systems, make the HFC and inert gas clean agents excellent choices for marine vessel fire protection.

Due to its weight and space advantages compared to inert gas clean agents, FM-200 is by far the most widely employed clean agent in marine applications. Protection of identical spaces with inert gas agents requires over three times the total storage cylinder weight of an FM-200 system. In addition, protection of identical spaces with inert gas agents requires over three times the deck space for system cylinder storage compared to an FM-200 system.

Internationally, numerous marine vessels employ FM-200 for fire protection, including:

- Chemical tankers.
- Passenger vessels.
- General cargo ships.
- Workboats.
- Ferries.
- Warships.
- Coast guard and research vessels.
- Offshore oil and gas installations.
- Pleasure crafts.

Table 2
Military Vessels Protected by FM-200 Clean Agent Systems

Owner	Vessel/Equipment
US Navy	Lewis and Clark T-AKE-1 Combat Logistics Force Ship
US Navy	USS Harry Truman aircraft carrier CVN-75
US Navy	USS Ronald Reagan aircraft carrier CVN-76
US Navy	San Antonio Class Amphibious Assault Ship LPD-17
US Navy	Littoral Combat Ship (LCS)
US Navy	DDG-1000 Zumwalt
US Navy	DDG-51 Arleigh Burke Class (destroyer)
US Army	LCU-2000 series watercraft
US Army	LCU -2018, LCU-2019, LCU-2027 watercraft in Kuwait
US Army	Various watercraft
US Army	Large tugs (LT)
US Army	M992 field artillery support vehicle
US Army	Logistics Support Vehicles
US Army	Landing Craft Utilities
US Army	Ocean-rated tugs
US Marines	AAAV Advanced Amphibious Assault Vehicles
French Navy	Nuclear aircraft carrier Charles DeGaulle
Singapore Navy	Coastal defenders
Spanish Navy	Frigates
Spanish Navy	Disembarkment watercraft
Royal Australian Navy	HMAS Tobruk LSH 50
Royal Australian Navy	HMAS Kanimbla LPA 51
Royal Australian Navy	HMAS Manoora LPA 52
Royal Australian Navy	HMAS Success OR304
Royal Australian Navy	HMAS Leeuwin HSS245
Royal Australian Navy	HMAS Melville HSS246
Royal Australian Navy	HMAS Paluma SML01
Royal Australian Navy	HMAS Mermaid SML02
Royal Australian Navy	HMAS Shepparton AGSC3
Royal Australian Navy	HMAS Benalla SML04
US Coast Guard (USCG)	USCG patrol boats
US Coast Guard (USCG)	USCG RB-M Response Boats

The US Navy and the US Army employ both FM-200 systems and “hybrid” FM-200/water spray systems in various watercraft. These hybrid FM-200/water systems combine an FM-200 gaseous agent – for guaranteed fire extinguishment – with a low-technology water spray

system operating off of a ship’s water main – to provide cooling and facilitate re-entry and ventilation. The key benefits of the system are a large reduction in combustion and decomposition products and the provision of cooling of the protected space. The US Army replaced Halon 1301 systems

DEFINING INNOVATION *since* 1919



INSTALLATION-READY™ TECHNOLOGY
FireLock EZ® Style 009N Coupling

victaulicfire.com



8267 REV A 07/2014
VICTAULIC IS A REGISTERED TRADEMARK OF VICTAULIC COMPANY.
© 2014 VICTAULIC COMPANY. ALL RIGHTS RESERVED.





Images courtesy of Mark L. Robin

with hybrid FM-200/water spray systems in more than sixty of their watercraft engine compartments, including engine compartments up to 1700 m³ (60,035 ft³) in volume. A small selection of military marine vessels protected by FM-200 clean agent systems are shown in Table 2.

FM-200 systems are also employed in the protection of pleasure craft. Pre-engineered FM-200 systems are available for the protection of engine compartments ranging in size from 0.7 to 43 m³ (25 to 1500 ft³), for both diesel and gasoline powered vessels. These systems employ

a design concentration of 8.7% v/v FM-200 and are available as automatic only units, and also as combination manual/automatic systems, equipped with an optional manual pull cable. Automatic systems are heat actuated, discharging at 79 °C (175 °F). Engineered FM-200 systems, capable of protecting volumes in excess of 43 m³ (1500 ft³), are also available.

Table 3
Miscellaneous Marine Vessels Protected by FM-200 Clean Agent Systems

Owner	Vessel/Equipment
Massachusetts Maritime Academy	Training ship TS Enterprise
Massachusetts Maritime Academy	Training ship TS State of Maine
Alaska	Coast Guard Patrol Boats
Germany	USS Ronald Reagan aircraft carrier CVN-76
Turkey	Patrol boats
USA	Rob Roy tugboat
Europe	Inland waterway barges
Austal USA	Cloud Nine Monohaul Cruise Yacht
Universal Orlando Theme Park	Water taxis
Walt Disney World	Water taxis
Recreational boats	Viking Yachts
Recreational boats	Berger Boats
Recreational boats	Riviera Group
Petrobas	FPSO Pioneer

Conclusion

Traditionally, fire protection systems for the offshore and marine vessel industries have used ozone depleting Halon or life threatening carbon dioxide. The successful use of clean agents in demanding marine applications fully demonstrates their ability to reduce industry dependence on ozone depleting Halons and improve life safety. Although typically used in land-based facilities for the protection of Class A hazards, gaseous clean fire protection agents have found numerous applications for the protection of Class B hazards, especially in the protection of marine vessels. The perils of fire at sea can be successfully and effectively controlled through the use of clean agent fire protection technologies.

 For further information, go to www.dupont.com

Reliable®

TECHNOLOGY • QUALITY • SERVICE

+44 (0) 1342 316 800
www.reliablesprinkler.com
rfsl@reliablesprinkler.com

STORAGE SOLUTIONS

Family owned business protecting life & property for over 90 years.

As warehousing solutions continue to develop, they need to cope with the demand for greater storage capacity. The Reliable Sprinkler Company leaves nothing to chance with its range of Storage Sprinklers. From In-Rack K5.6 Sprinklers, to the K25 EFSR (Early Supression Fast Response).

Reliable Has It Covered.

More Sprinklers available. Contact us now for details!



GL112 Upright,



GL112 Pendant,



N252EC,



JL14/JL17 ESFR,



N25 ESFR,



J168 CMDA,



HL22 ESFR



Reliable-Automatic-Sprinkler- Co-Inc



Reliable-Automatic-Sprinkler



RASCOUK

Commercial Cooking Fire Suppression Systems

Commercial cooking operations present an inherent fire risk. According to NFPA's 2012 "Structure Fires in Eating and Drinking Establishments" fire departments in the U.S. responded to an annual average of 7,640 structure fires resulting in \$246 million in property damage. Roughly 57% of those fires were caused by cooking equipment.



Craig Voelkert

Craig Voelkert is Vice President of Sales – Special Hazards for Amerex Corporation. Craig entered the fire protection industry in 1973 and has served on several trade association board of directors and industry technical committees including the Fire Equipment Manufacturers Association (FEMA) and the National Fire Protection Association (NFPA). Craig is a Certified Fire Protection Specialist – (CFPS) and Certified Fire and Explosion Investigator – (CFEI).

Clearly there is a need for reliable, efficient automatic fire suppression systems to suppress fires in cooking appliances, grease filters and exhaust ducts.

Beginning with adapted industrial dry chemical systems in the 1960's, commercial cooking fire suppression systems have evolved to specially designed and tested wet chemical systems. These systems are tested mechanically and on live fires through various test agencies and test protocols including Underwriter's Laboratories (UL) subjects and standards. Like the systems themselves, the test standards have evolved over the years as new cooking operations, methods, appliances, grease capture and grease vapor exhaust

systems changed. As commercial cooking operations strived to maximize profitability and efficiency by using appliances that cooked faster through increased energy output, the fire risk increased dramatically.

In 1995, the commercial cooking world had to deal with the new test standard for fire suppression systems – ANSI/UL 300. Many changes took place regarding the suppression of fires in various appliances as a result of the new UL test standard. One of the things that didn't change at the time was the fire detection for those systems. Every fire suppression system manufacturer continued to use fusible links, tied to a cable under tension, with a detector over every appliance and in the duct opening per NFPA 17A – *Standard for Wet Chemical Fire Extinguishing Systems*.



Image courtesy of Amerex



Image courtesy of Amerex

Since 1995, things have changed when it comes to detection for wet chemical systems. Fire suppression system manufacturers are looking at new ways of doing detection in an effort to pick up the fire faster, make the systems more reliable and make installation and maintenance of the systems easier. There are options regarding the type of cable that is used, different fusible links, different deployment of fusible links and a system that doesn't use any fusible links. Let's look at some of the options available today.

Link and Cable Detection

The most common or traditional detection system for wet chemical systems is still being used today. This consists of a stainless steel cable run through corner pulleys and conduit to detector brackets inside the hood behind the filters. Per the National Fire Protection Association 17A: Standard for Wet Chemical Extinguishing

Systems, a detector and bracket connected with conduit and cable, is placed over each appliance and in the duct opening. The cable is placed under tension so that when the link separates, the release of tension fires the system and discharges the wet chemical onto the appliances, throughout the plenum and the exhaust duct. Proper placement of the detector in the path of the exhaust and proper temperature selection of the fusible link would lead to a faster response to fire.

This arrangement is still viable and used in a vast number of existing systems. Because grease can accumulate in the conduit to the point where the cable can become seized, it is essential that the conduit be cleaned or replaced on a periodic basis. Because they are constantly under tension or "load" and are subject to accumulating grease all systems using fusible links must have the links replaced every six months with fresh links.

Quick Response Links

Some manufacturers allow the use of "quick response" fusible links in an effort to detect and react to a fire faster. A faster detection and reaction time will provide better fire protection by minimizing the amount of damage sustained in a fire incident. The faster the fire can be detected, the faster it can be suppressed.

Alternate Detector Placement

Instead of placing a fusible link and bracket over each appliance and in the duct opening, some system manufacturer's installation and design manuals are allowing the fusible links and brackets to be located on 24" centers throughout the hood length regardless of the placement of the appliances. This accomplishes effectively having detection throughout the entire hood, regardless of appliance placement or size. It also deals with the dilemma of adequate detection for large appliances such as large ranges or griddles. Because it still uses conduit and brackets it is still susceptible to grease accumulation and therefore should be cleaned or replaced periodically and the links replaced semi-annually.





Image courtesy of Amerex

Sheathed Cable

Another new option that has emerged is the use of sheathed cable. Looking much like the cable used on bicycles, this cable is encased in a flexible sheath that eliminates the need for conduit and corner pulleys both outside and inside the hood. By using sheathing instead of conduit, the ability to accumulate grease between the sheathing and the cable is lessened. Because there is no conduit to measure and cut, the installation can be accomplished in less time and maintenance is also easier.



Carabineer / Lanyard Cable

This option consists of carabineers attached to lengths of stainless steel cable that is pre-measured and pre-cut and assembled at the factory. Carabineers clip on to the fusible links inside the hood on 24" centers or less. This eliminates the need to use brackets and conduit inside the hood, thus making cleaning of the lengths and replacement of the links easier. The maximum spacing of fusible links at 24" centers covers the entire hood and solves the dilemma of large appliances. Since the carabineer cannot fit through a corner pulley, this system is only available for use on either single hoods or hoods that are butted up end-to-end. It cannot be used for multiple, separate hoods, or hoods that are located back to back of each other. Since there is no conduit to measure, cut and fit, the installation tends to be faster and maintenance is easier.

Pneumatic Tubing

This system does not use fusible links at all. Rather, a heat sensitive tube that is pressurized with air or nitrogen is run from a control device to the hood and then throughout the full length of the hood. When the tube is exposed to

overheat or flame, it bursts, releasing the pressure and discharging the system. The entire length of tubing within the hazard area is a detection device. This allows for a faster response to a fire condition which could result in less damage from a fire. Unlike fusible links, the tubing must be replaced every three years instead of every six months. It does however, require cleaning every six months. Like the sheathed cable and the lanyard cable, there is no conduit to be measured, cut and fitted, so installation is faster and easier in some respects. Maintenance is easier as well. Without the conduit, there is no accumulation of grease that can cause the system to malfunction during a fire incident.

The Future

It can be assumed that commercial cooking fire suppression system manufacturers will continue to come up with new fire detection solutions for their systems. Look for innovations that will make the systems more reliable, easier to install and maintain while providing superior fire protection.



For further information, go to
www.amerex-fire.com



AMEREX

Ramp up your fire protection.

INTERSCHUTZ
2015
Visit us at:
Hall 13 Stand D02
8-13 June 2015 • Hannover • Germany



Now boarding—the Amerex Clean Agent Wheeled Fire Extinguisher using 3M™ Novec 1230™. Not only is it exceptionally effective on fuel spills and engine fires, it causes no collateral damage to equipment not involved in the fire. It's also environmentally friendly, with an extremely low atmospheric lifetime. The Amerex Clean Agent Wheeled Fire Extinguisher—goes in strong, comes out clean. And only Amerex has it.

The Innovation of Fire Protection Equipment

Technological developments have revolutionized deepwater drilling and production in recent years and the need for high performance, robust and dependable solutions has never been greater. This is because in the harsh environments presented by the offshore world, the requirement for equipment to operate safely and effectively while providing peace of mind, is paramount.



Doug Marti

However, with a significant number of aging platforms and rigs still in use across the globe, can they keep up with the pace? With fire protection a critical part of onboard safety, this article looks at why innovative corrosion-free, rubber-based solutions can be the key to helping bring an aging fleet of platforms back to life, while still creating a safe working environment for all and meeting the necessary industry standards.

Pushing the limit

The exploration of offshore oil and gas has been moving to deepwater fields, requiring wells to be drilled deeper and reach further in order to provide more cost-effective and safe well completions.

Adding to this is the requirement to extract more oil and gas than ever before, and exploit harsher environments in new locations around the world. In addition, there was a time when customers required products that could last 20 years – now it's often up to 40 years.

When it comes to choosing the most suitable material to handle these challenges, rubber-based material is, not surprisingly, becoming a more popular choice due to its flexibility and durability. Compared to alternative materials, such as steel and fiberglass, rubber has a wide temperature range and exceptionally high pressure resistance. It is a diverse material that performs at every level to seal, damp and protect, and most of all, it has an extremely long lifetime.



Doug Marti is the Market Development Manager for Trelleborg Offshore and Construction.

A Question of Safety

With all this in mind, it's no surprise that safety is a key priority for the offshore oil and gas industry, and ensuring safety onboard any production facility is absolutely vital. Critical to this is advanced fire protection systems, specifically the deluge system which, designed to protect areas where fire is likely to spread rapidly, is now commonplace on offshore facilities. While relatively simple in design and installation, its operation is essential for the safety of onboard personnel, asset protection and preventing event escalation.

So, in the offshore oil and gas sector, where the risk of rapid fire spread is greater than most, firestop solutions such as the deluge system need to provide full assurance that they will not fail to deliver on any critical firewater or utility piping installations.

However, traditional carbon steel fabricated deluge systems are prone to corrosion when carrying saltwater, which can restrict or even block flow as rust forms, reducing the effectiveness of the system. This has resulted in the industry suffering from costly shutdowns and repairs, and in the worst-case scenario, risk of failure in an emergency.

Next Generation Protection

As such, the industry has seen an increase in corrosion-free firestop alternatives that prevent such issues and give peace of mind to the offshore oil and gas sector. This next generation of fire-deluge system, which uses synthetic rubber instead of traditional materials such as rigid steel, titanium, copper nickel and fiberglass piping, has now been successfully installed and used in many regions across the globe.

By utilizing synthetic rubber, these systems are non-corroding and can withstand jet fires with a heat flux of 390kW/m², temperatures above +2552 °F / +1400 °C and flame speeds that exceed the speed of sound. This makes it an ideal choice for use in deluge and sprinkler systems on offshore oil and gas installations, ships and other hazardous environments. Due to its flexible characteristics, this new technology can be used to partly or completely replace old systems and is an ideal solution for temporary deluge systems when high safety levels need to be maintained during modification work to existing systems.

Meeting Regulation

The United States, specifically the Gulf of Mexico (GoM), has failed to benefit from this innovation, until now. Following extensive testing a recently awarded United States Coast Guard (USCG) approval means that corrosion-free, rubber-based solutions are now qualified for use.

With an estimated 3,858 active platforms and a total of 98 different companies with listed assets that utilize fire deluge systems in the area, the USCG approval of an alternative offshore piping system will allow operators working in the area to easily and quickly increase offshore safety and provide peace of mind for the entire operation.

This is because, as well as offering exceptional performance, rubber-based alternatives are extremely flexible and can be moved and reused (if temporary). Compared with rigid pipe systems, they require fewer construction drawings. Accurate measurements are reduced as the system can be designed and modified on site. Furthermore, systems are installed using no hot work (welding or sparks) that typically shuts a platform down.



Image courtesy of Trelleborg Offshore and Construction



Complete line of Electric and Diesel Fire Pump Controllers with





Built to standards

- NFPA 20
- FM approved
- A2P
- LPCB
- EN12845

ViZiTouch Operator Interface

- 4.2" color touch screen
- Quick and easy commissioning
- User friendly operation






LISTEN • DEVELOP • LEAD

tornatech.com



Image courtesy of Trelleborg Offshore and Construction

Dated Infrastructure

The importance of innovative new rubber-based solutions gaining USCG approval is further demonstrated by the high number of aging platforms that currently reside in the GoM and may require upgrading in order to meet the new, extended lifetime of projects.

Roughly half of the regions' oil and gas production platforms – more than 3,000 – have been operating longer than their designers intended, with roughly a third dating back to the 1970s or earlier, long before development of modern construction standards.

Worryingly, this has a significant effect on safety as equipment can severely degrade or corrode after so many years of use. This means that older structures could be more prone to accidents, or fires, and are much more dangerous for workers. Platforms, which are subjected to extreme ocean currents, corrosive salt water and frequent hurricanes, aren't mobile and can't simply be brought back to shore for repairs.

A Proven Solution

As a result of both customer and industry feedback, there are now piping systems available to the industry which are designed for use as deluge and sprinkler systems, especially in harsh environments. The design incorporates three core layers: the fire shield, pressure liner and inner

layer. These combine to give the system high tolerance to impact, jet fire (+2552°F / +1400°C for one hour), explosion and water hammer, as well as being lightweight, durable and easy to cut, fit and install.

Compared with a conventional carbon steel based deluge system, which requires more frequent testing and maintenance, and needs replacing at regular intervals over the platform or vessel's lifetime, rubber deluge systems deliver a very low total life cost.

The flexible piping system offers a 30-year minimum maintenance life, and its corrosion-free performance means system testing frequency can be reduced to statutory requirements.

Passive Fire Protection

In addition to fire deluge systems, other firestop solutions are available in a series of materials and products to protect personnel, equipment, critical components and structures, and to assist emergency response activity by buying time to gain control of the fire, and evacuate the area. With proven engineering and manufacturing techniques for protection of all kind of fires, from simple cellulose, via HC- and jet fires by missile launching, the rubber materials are built-up of layers and meet protection requirements for corrosion, thermal, fire and mechanical, to protect structures from exceeding temperature limits.

It is key that any fire protection specified for use on an offshore facility provides the following:-

- **Stability:** The structure shall fulfill its load-bearing capacity throughout the fire exposure period.
- **Integrity:** Partitions shall prevent spread of flames and hot fumes throughout the fire exposure period.
- **Insulation:** The unexposed side of partitions shall not reach surface temperature in excess of a certain level throughout the fire exposure period. The allowable/critical temperature on the surface of a component is project specific information, with typical values of max +392 °F to +752 °F / +200 °C to +400 °C.
- **HSE:** Low generation of smoke and non-toxic fumes.

Conclusion

Safety on offshore oil and gas installations is of paramount importance, and having an effective and reliable deluge and firestop system is vital to ensuring onboard safety. In the harsh offshore market, operators need the assurance of a material that delivers proven performance for their critical firewater and utility piping installations, without fail.

As new high performance and reliable solutions are developed, the onus is on manufacturers to ensure their solutions are tested and audited to meet the necessary regulations of the different offshore regions in which they operate.

However, with the high number of aging platforms and rigs currently in operation in the GoM, and the threat of critical failure looming, this is one area in particular where benefits from new technologies and innovations will help bring them back to life and ultimately reduce fire risks, potential downtime or closure.

As such, it has never been more important for leading manufacturers to ensure their products meet the highest standards, especially if they are to guarantee that offshore operators have access to the latest and most innovative solutions which will significantly improve onboard safety and provide peace of mind to all those on board.

 **For further information, go to**
www.trelleborg.com

MANUAL CALL POINT MISUSE?

PROBLEM SOLVED!



Every false alarm is costly, disruptive and detrimental to safety. It may also affect customer service, productivity or the general routine of any organisation.



The **Euro Stopper®** is a tough polycarbonate cover designed to deter vandalism and misuse of manual call points, helping to prevent false fire alarms.

When lifted a powerful 96dB integral alarm is activated drawing immediate attention to the area and the perpetrator will either run or be caught.

New feature! The Euro Stopper frame now 'glows in the dark!' Call sales or visit STI's stand at FIREX to find out about this new innovative technology *Glow Guide*



Safety Technology International (Europe) Ltd
For more information please contact sales:
Telephone **01527 520999**
info@sti-europe.com | www.sti-europe.com



Visiting FIREX?
We will be on stand G170.
Will be great to see you!



BS 5839-1:2013 and BS 5839-6:2013 – What's changed?

FIA Technical Manager Phil Martin looks at some of the more significant changes introduced in the new standards and some of the reasons behind them.



Phil Martin

Part One

BS 5839-1:2002 was updated with amendment A1 in 2004 and then amendment A2 in 2008. The industry was anticipating that there would be a further amendment in 2013, therefore many were surprised when it was released as BS 5839-1:2013 with a revised title rather than A3. This is because BSI house rules do not generally permit more than two amendments. Despite appearances this is not a full revision of the document; the bulk of the text remains unchanged but there are a number of technical changes which, whilst small in number, are significant.

The main drivers for change were the findings of the Rose Park care home enquiry; the results of experiments done on the mounting heights of optical beam smoke detectors and aspirating smoke detectors; and the publication of EN 54-23.

Before we look at the technical changes it is worth noting that the title has been extended to make it clear that it only covers 'non-domestic' premises. This clearly distinguishes it from -6 which does cover domestic premises.

Two of the findings of the Rose Park inquiry have influenced changes to BS 5839-1; delays in staff locating the fire and delays in summoning the Fire and Rescue Service (FRS). The reviewers looked at these areas for care homes and other premises.

The standard now recommends addressable systems in all but the smallest premises where occupants of a building are going to need assistance from staff to evacuate such as care homes and hospitals. Addressable systems are capable of providing much more specific information about the location of the



Fire Industry Association

Phil Martin is Technical Manager at the FIA.



Image courtesy of C-Tec

detection device that has been activated and hence enables staff to go straight to the source of the problem rather than searching for it as would be the case with a non-addressable (conventional) system.

Part of the difficulty in locating the fire at Rose Park was that the zone plan wasn't clear which, in part, stemmed from disagreements between various parties as to who was responsible for amending it following some alterations. The standard deals with zone plans in a number of ways. It now says that responsibility for supplying the zone plan should be 'defined at an early stage of the planning of an installation'. It recommends that the installer consults with the designer, the user or purchaser, the supplier of the system and consultants. During these consultations responsibility for providing the zone plan should be settled.

Though not related to care homes but on the topic of zone plans there is a new note which recommends that additional information should be included on the zone plan and talks particularly about shopping centres where occupier details might be helpful. It also makes the important point that this information should be kept up to date. It also now says that before accepting a system, the purchaser (or appropriate representative of the purchaser) should ensure that a suitable a zone plan is provided close to all CIE. It further recommends that when a maintenance organization takes over a maintenance contract that the absence of a zone plan should be reported to the user along with any other non-conformities.

Another one of the problems at Rose Park was the delay in summoning the FRS. The standard now says that automatic transmission of fire alarm signals is necessary in the case of residential care premises it also notes that automatic transmission is a requirement under Scottish building regulation.

Previously the standard recommended that Alarm Receiving Centres (ARC) should be third-party certificated. In addition, it now says that the scope of the certification should include monitoring of fire signals not just security.

The standard now recommends that in residential care premises the FRS is summoned immediately when the fire detection and fire alarm system operates and re-emphasises this saying a staff alarm should not incorporate any delay in

Images courtesy of E2S



summoning of the FRS when the fire alarm system operates. It does say however that there may be a delay in the general alarm signal, provided all staff are made aware of the fire alarm signal.

The minimum sound pressure level (SPL) near the bedhead recommended in BS 5839-1 remains at 75dB(A). This is clearly unreasonable where the occupant of the bed is in no state to help themselves. Previously the standard implied that a lower SPL would have to be agreed among all interested parties. In the new standard these recommendations have been removed. It now simply recommends audible alarms in residential care premises should provide 75dB(A) near the bedhead except where the alarm signal is not intended to rouse occupants from sleep.

Going back a couple of years some tests, partly funded by the FIA, were carried out using Optical Beam Smoke Detectors (OBSD) and Aspiration Smoke Detectors (ASD) in tall spaces. This led to the section on ceiling heights being changed. Normal sensitivity OBSD and ASD can be used up to a general ceiling height of 25m and 15m respectively; more sensitive variants can be used up to 40m. The standard says that in both cases it should be assumed that stratification will occur in spaces more than 25m high unless there is reason to believe otherwise

and additional low level detection would be required: angled beams or low-level (supplementary) detection in the case of OBSD and drop pipes in the case of ASD. The advice on supplementary detection from the previous version remains but no new advice on angled beams or drop pipes is provided. The FIA has a guidance document on ASD which is referenced in the standard and the FIA is working on guidance for angled beams.

Some other changes relating to detection ASD are:

- Sample points may now be flush with the underside of a ceiling
- ASD should be used in racked storage over 8m
- Where ASD is used in dusty or dirty environments they must be fitted with a filter and provided with appropriate maintenance for those filters to prevent false alarms

Where previously selecting Visual Alarm Devices (VADs) was a bit of a guessing game, it is now more of a science. The standard still says 'the intensity of output of visual alarm devices should be sufficient to attract attention, but not so high as to cause difficulty with vision due to glare'. Previously the system designer would have made a judgement as to the number and



Image courtesy of E2S

type of visual alarms required. However, a new note has been added along with a whole new annex. This change was triggered by the publication of BS EN 54-23:2010 'Fire detection and fire alarm systems. Fire alarm devices. Visual alarm devices', which specifies the requirements, test methods and performance criteria for VADs used in fire alarm systems. The new edition of the standard calls for VADs to comply with this new standard which requires the manufacturer to provide data on the product which the designer can use to determine the type and location of the VADs. The new standard also calls the designer to use the methodology in the joint LPCB/FIA document CoP 0001, 'Code of Practice for visual alarm devices used for fire warning'. At first view CoP 0001 looks rather daunting but the process for the selecting VADs is fairly simple.

The mounting height of call points was 1.4m above finished floor level (AFFL) +/- 200mm, giving you a range of 1.2 to 1.6m AFFL. However, accepted practice in buildings used by wheelchair users was that the mounting height of switches and the like was no greater than 1.2m AFFL. With millimetre accuracy you could just satisfy both requirements. However the standard has been amended to give a range of +/-300mm so the mounting height can be between 1.1m and 1.7m AFFL.

The term 'Responsible Person' is no longer used. It was considered that the reader may be confused with the term used in English and Welsh fire legislation and which has a radically different meaning. A broader term 'Premises Management' is now used but some still needs to be made responsible for the FD&FA system so the duties remain largely unchanged.

A tiny change in the definition of a Competent Person (designers, installers, maintenance technicians and commissioning technicians) has been introduced. Changing 'necessary training' to 'relevant current training' serves to underline the need for update and refresher training.

Part Six

The review of BS 5839-6 was prompted by a general need to update the standard to incorporate changes to other standards and the like to comply with BSI house rules and the findings of the Rose Park Care Home fire inquest. Despite being a new edition rather than an amendment, the bulk of the text of the 2013 version remains unchanged from the 2004 version. The bulk of the changes refer to sheltered housing and there is no mention of care premises.

The new title refers to domestic premises rather than the old title which referred to dwellings. This reflects the

scope of the standard which covers the common parts of some forms of multiple tenanted premises. This change is carried through the rest of the document where the preferred term is premises.

When the concept of 'sheltered housing' was first conceived such premises would comprise a number of separate dwellings (flats or bungalows for example) occupied by people who, on occasion, would require some practical assistance and where there would always be someone on site to provide that assistance. Increasingly, some premises have taken on some of the appearance of care premises and/or in many instances there is no permanent onsite support. Clearly this has an impact on the risk from fire the tenants are exposed to. The bulk of the changes reflect this.

There is a new sub-section within the commentary of the 'choice of system' section which deals with systems for sheltered housing. It points out that many sheltered housing schemes are essentially general needs blocks and that generally there will no evacuation strategy (stay put). People are likely to be slower to evacuate from the flat of fire origin or other flats as directed by the FRS.

With this in mind the standard advises that an occupant of the flat of fire origin should be given the earliest warning of fire by fitting smoke/heat alarms and that, where there is a social alarm system, the smoke/heat alarms are connected to it. The standard gives some general advice on how the social alarm system should function and makes the point that two way voice communication can be used to verify the alarm. The standard also recommends that where there are common areas, such as a lounge, that detectors should be fitted to provide adequate time to use the common means of escape and that these detectors should also be connected to an ARC.

There are some changes in the selection and location of detectors in the new CoP. It now recognises that CO and multi-sensor detectors may be beneficial in certain instances. It now adopts a similar approach to detectors in pitched roofs as BS 58390-1. It also now gives recommendations about protecting loft spaces with automatic fire detectors where electrical systems, such as pv solar panel systems and heating systems are fitted.



**For further information, go to
www.fia.uk.com**

Something BIG is coming

Visit us at INTERSCHUTZ 2015 (June 8–13, Hanover, Germany).
We look forward to seeing you in Hall 12, Booth C56.
Curious? You should be ...





YOUR FIRE PROTECTION PARTNER



ARGOSYSTEM®



CO200®



NOVEC 1230™



EI MIST®

**Thousands of systems installed worldwide.
We guarantee the safety of people and property in those
fields where fire protection is more challenging.
Nuclear and thermoelectric power plants, military ships,
refineries, steel plants, historical buildings.**

**Come and visit us at:
INTERSCHUTZ 2015 - HALL 013 STAND E02
HANNOVER MESSE, 08-13 June 2015**



WORLDWIDE FIRE PROTECTION

EUSEBI IMPIANTI srl

Via M. Natalucci, 6 - 60131 ANCONA Tel. +39.071.9504900 - Fax +39.071.2865099
www.eusebi-impianti.it eusebi@eusebi-impianti.it

A Safe and Pleasant Stay – Completely Protected from Fire

Reputation is a fragile thing. Years of hard work building a successful business and providing good and efficient service to thousands of happy and thankful customers can be completely undermined in an instant by a single incident. To re-establish the same level of reputation may well take many more years.



Markus Späni

One example of such a damaging incident would be the outbreak of fire in a hotel. Even when nobody is hurt, a single incident where prevention measures fail and fire is known to have started can result in the complete erosion of trust so vital to guests staying under the hotel's care. Yet paradoxically, any occurrence of unwanted or 'false' alarms will irritate and alienate even the most reasonable guests when the alarms are eventually proven to be groundless, especially when they happen at night.

With so many different sorts of area which all need different levels of fire protection – guest rooms, kitchens, laundry and drying rooms, and plant rooms as examples – the problems involved in providing completely reliable fire protection within hotels are multi-faceted and complex.

▼ **Kitchen:** Due to the high fire load of open flames or frying pans, commercial kitchens are one of the most dangerous places in a hotel.

Guestrooms

Typically, guestrooms occupy a large proportion of any hotel. It is not surprising therefore that guest rooms, which house a wide variety of possible ignition sources such as overheating electrical devices, cooking facilities and even misbehaving occupants, are the primary origin of non-confined fires in hotels. According to the US's National Fire Protection Association (NFPA), they are also responsible for around 72 percent of civilian deaths. Most fires in hotel rooms start with an incipient, smoldering stage and, if detected early enough, can often be extinguished simply by removing the source of power (in the case of an electrical fire), or with water or an extinguisher of the appropriate variety.

It is critical therefore for the safety of all occupants of the hotel that all potential sources of ignition or combustion are kept to an absolute minimum within the rooms. Guests should be made aware of



Markus Späni is
Application Manager in
fire protection at Siemens
Building Technologies.



15th International Water Mist Conference

**28th and 29th
October 2015**

**Amsterdam,
Netherlands**

Mercure Hotel Amsterdam City

**Registration
open from
1st June
onwards!**

**EARLY BIRD PERIOD
ENDS ON 31st July!**

**for more information visit:
www.iwma.net**

the hotel's stance on smoking, handling open flames such as candles or behaving in any way which might lead to the outbreak of fire. All electrical equipment such as television sets, fridges, kettles and irons, must be well maintained, carefully cleaned and checked on a regular basis. Every guestroom should be fitted with at least one automatic, point-type smoke detector and this should be installed in such a way that it delivers the earliest possible warning of fire. On no account should it be susceptible to false alarms caused by deceptive phenomena such as steam from the shower.

The type, setting and positioning of the detectors should be determined by the likelihood of this deceptive phenomena which generally has less impact on bigger, higher rooms. In small guest rooms, intelligent multi-criteria fire detectors must be used to guarantee early fire detection and high immunity to such deceptions. To ensure reliable operation, the detector in a guest room must be sited in an area where fire phenomena such as smoke may easily reach the detector and where the intensity of possible deceptive phenomena are as low as possible. Special attention must be given to the hotel's HVAC (heating, ventilation and air conditioning) system, so that in the event of a fire, the system does not prevent smoke from reaching the devices in sufficient concentration.

Kitchens

In commercial kitchens – and those in hotels are no exception – the open flames, grease traps, large cooking pots, kettles, frying pans and deep fat fryers present a very real hazard because of high fire load and the potential for catching fire if overheated. This makes the kitchen one of the most dangerous places in the hotel. But there is little possibility of eliminating or even reducing all sources of ignition here.

However several sensible yet simple precautions can be put in place to limit the risk of fire. These include keeping flammable materials such as cardboard or paper packaging to a minimum and always away from the flames of cookers. Taking care when lighting all devices, especially gas stoves, should be an obvious procedure, along with turning off electrical appliances when they are no longer required. Oven mitts, tea towels and other combustible cloths should not be left around the stove and, if not wanted for a long period, turning off the gas supply is another sensible precaution. Again, regular cleaning, checking and maintenance of all appliances is not only a wise move as regards hygiene of the equipment but also from the point of its safe operation.

Traditionally smoke detectors have not been used in commercial kitchens. Again the problem of steam and other deceptive phenomena makes their installation impractical, only much more so. When planning and implementing any fire detection solution for a hotel kitchen, the increased fire risk, the steam and the sudden, rapid rises in temperature caused by activity in the kitchen must be taken into consideration. Where detectors have been used in kitchens in the past, they were usually heat detectors which triggered an alarm at a pre-determined maximum temperature around 80°C. More often, fire blankets were positioned around the kitchen so that occupants of the kitchen could use them to suppress any outbreak. Manual call points were installed so the alarm could be raised if the incident escalated. However, some of today's

devices are able to differentiate between the aerosols caused by cooking and the characteristics of combustion. They are able to assess signals intelligently, can be adapted to ambient conditions and can be set up to respond appropriately to the many occurrences of steam that is a constant feature of busy kitchens. When positioned outside the immediate cooking area, where the rapid temperature increase caused by cooking, frying and opening ovens is less immediate, such detectors can effectively cover even the largest commercial kitchens and will even detect smoldering fire as well as the outbreak of open flame. Just as in the hotel's guestrooms, these detectors should be mounted away from the direct flow of the ventilation or air-conditioning systems so that any airborne particles of genuine smoke are not diluted before they reach the detectors.

Laundries

Laundries too are relatively critical areas in hotels. With lots of combustible materials such as cleaning agents and fabrics, there is usually a high fire load and the possible overheating of various heavily worked electrical equipment – most involving integral heating elements – also presents a high fire risk. Again deceptive phenomena such as steam and dust is more than likely to be present. Fire detectors which guarantee an early warning whilst guarding against unwanted alarms are needed to alert and evacuate all parties at risk and to activate the relevant fire control installations.

The main causes of fires in laundries are technical defects. Just as in the kitchen, certain procedures such as regular cleaning, checking and maintenance of all appliances can help minimize the number of potential ignition sources. Again removing all unnecessary flammable materials such as paper or cardboard packaging is also vital. The heat within the laundry area can cause a reaction between oxygen within the atmosphere and unsaturated fatty acids, so grease-affected textiles should be cleaned separately and warm fabrics and



BIOex Foam concentrates

*Fight the fire but
protect what's essential !*



**In 2002, BIOex was already committed
to the protection of our environment
by launching the first fluoro-free
foam concentrate.**

Today, BIOex designs and manufactures fluoro-free foam concentrates tested and approved by our customers worldwide:

- ▶ ECOPOL: all-risks
- ▶ BIOFOR: wetting / foaming agent
- ▶ BIO T: the training concentrate

BIOex also offers a complete range of synthetic and protein based foam concentrates.

Certifications: EN1568, ISO7203, ICAO, IMO, VERITAS, LASTFIRE, GESIP, UL, FM, APSAD R12

▶ www.bio-ex.com



DA / graphisme : www.gullaumebert.fr



▼ **Laundry: Deceptive phenomena** such as steam and dust are more than likely to be present in a hotel laundry.

Complete fire protection for hotels

The problems involved in providing comprehensive fire protection for hotels are complex. In short, to protect the guests and staff of any hotel throughout the day and night, along with the building itself, its reputation and its business continuity, it is necessary to put certain procedures in place: the regular cleaning, checking and maintenance of all appliances; the removal of flammable materials and the elimination of obstacles from stairways and all evacuation routes; the positioning of informative signs and notices keeping guests informed of restricted practices, alarms, practice drills and evacuation procedures; the siting of all types of relevant fire extinguishers; the keeping of all possible sources of ignition to an absolute minimum; the siting of manual call points throughout the hotel in all the appropriate places – along with the full and adequate training of all staff, both full-time and part-time.

It is vitally important for hotel owners and operators to utilize the protection of an early warning fire system which features intelligent detectors able to differentiate between the outbreak of fire and other, naturally occurring, deceptive phenomena. False fire alarms are a major issue for the hotel industry and must be avoided. The logistical problems of evacuating the hotel when dealing with large numbers of guests can be significant. The problems when dealing with those same inconvenienced customers when an unnecessary evacuation happens at night-time can be much greater.

Detectors should be positioned where they are not adversely affected by the hotel's ventilation system or other influences that detract from their performance. In doing so, it is possible to provide effective and reliable detection at the earliest possible opportunity of the outbreak of fire starting in all possible ways – without causing the unwanted day or night-time alarms that alienate the hotel's guests. This intelligent system should be allied with, if possible, a reliable and effective extinguishing system in those parts of the hotel wherever it is practical.

 **For further information, go to**
[www.siemens.com](http://www.siemens.com/infrastructure-cities)
/infrastructure-cities

items of clothing should not be stacked or packed whilst still warm.

As in the kitchen, the best possible fire protection will be achieved if the detection system is designed in such a way that the detection behavior automatically adapts to the environmental conditions. Intelligent fire detectors enable time dependent or event controlled detection behaviors. This feature allows, during the time the laundry is in operation, to set the system to alarm when there is medium smoke generation. But when it is not, the system should be set to alert as soon as there is only little smoke generation. In addition to the automatic fire detectors, manual call points should, of course, be installed for manual triggering.

Plant rooms

The plant rooms of hotels are usually quite limited in space but can house critical power supply, control, security or IT and communications systems. As unrestricted availability of each of these systems is a fundamental requisite for the hotel's continued operation, these rooms especially need protection from fire. Due to the enormous business impact if one of these systems go out of operation, the plant rooms pose a high fire risk. When electrical and electronic components overheat, small quantities of aerosol are generated. If the overheating is not detected, a smoldering fire will develop during which smoke becomes

increasingly visible. If the problem is noticed at this point, the fire can be extinguished easily with damage limited to a single device or area.

During the smoldering stage, little heat is generated which means that the increased aerosol concentration is not lifted and carried through a wide area. Also if the systems are being constantly ventilated to keep temperatures of the hardware and cabling down, the high airflow will dilute the concentration of aerosols. Fortunately this means that the lowest aerosol concentrations which must be detected to keep the area safe, can be measured and monitored by aspirating smoke detection (ASD) set to the highest levels of sensitivity.

These systems are able to generate different warnings and alarms but are also used to activate the appropriate extinguishing systems. Extinguishing systems using inert gases or dry chemical agents are ideally suited to protecting delicate electronic equipment. However, recent findings have shown that malfunctions can occur in hard disk drives (HDD) caused by the high noise levels that happen when automated extinguishing systems are released.

These malfunctions range from automatic shutdowns to more severe disturbances resulting in a loss of data. So, if possible, it is advisable to improve the room's acoustics, to extend the discharge time and to use only those nozzles that keep noise levels below those that pose a risk during discharge. To protect structural damage to the area, all gaseous systems also need pressure-relief openings

Fire-Cryer[®] Plus Voice Sounders

No Compromise - Be Seen, Heard and Understood!

With superb clarity, integrated synchronised LED strobe and 7 selectable messages from a multi-lingual library of hundreds, the Fire-Cryer[®] Plus enables a standard fire alarm system to signal much more than just fire.

Using just 2 wires, Fire-Cryer[®] Plus is 100% synchronised and offers four unique fully compatible models - wall or base mounted, open area and industrial units.

A dedicated interface is available for integration with gas extinguishant panels to provide a cost effective and clear delivery of staged alarms.

See us at FIREX International - Stand D142



VimpeX is a specialist manufacturer and supplier of Fire Detection, Alarm and Evacuation products.

www.vimpeX.co.uk

Tel: +44 (0) 1702 216 999

VIMPEX
Shaping Alarm Technology



WATER SPRAY NOZZLES



DELUGE VALVES

**MANUFACTURING EXCELLENCE
SUPERIOR PERFORMANCE
WORLD-CLASS FIRE FIGHTING
PRODUCTS**



ALARM VALVES



FOAM EQUIPMENT AND SYSTEMS



MONITORS

HD Fire Protect Pvt. Ltd.

C-3/6, Nandanvan Industrial Estate, LBS Marg, Thane - 400604, India Tel: +(91) 22 25826793 Fax: +(91) 22 25812524
info@hdfire.com www.hdfire.com

Securing Business Continuity in the Printing Industry

Solvents used in printing machines for magazines constitute a substantial fire risk potentially causing large scale fires and losses of parts, if not the entire printing machine. This has dramatic effects on the production process and leads to considerable consequential losses.



Rüdiger Kopp

To date printing machines are protected with CO₂, Aerosol or foam fire fighting systems. Due to the open environment around the printing machines and the presence of personnel, safe and effective alternatives are sought by printing companies.

High pressure water mist technology ideally matches the printing machine operator's needs and fulfils the requirements of insurers.

Fire Protection Challenge in the Printing Industry

In the printing industry, fire protection plays a particularly important role. Flammable solvents in paints and materials, machine parts operating at high speed, the electrostatic charging of components are all potential hazards.

That is why CO₂ and Aerosol extinguishing systems are often used in this industrial sector. These extinguishing

agents are effective, clean, and residue-free. They neither damage the items to be protected, nor do they conduct electricity. CO₂ systems, though, can only be activated after a specific pre-warning phase to not endanger any operation personnel. Both CO₂ and Aerosol extinguishing systems are limited in their discharge time. If fires have not been extinguished during system discharge this can lead to substantial fire damages.

These two system types have so far protected the printing machines at PRINOVIS, Europe's largest printing group, operating at four locations in Germany and the United Kingdom. In their production site in Dresden every year about 150.000 tons of printed papers are processed.

▼ **Retro Gravure Printing Machines at PRINOVIS.**



Rüdiger Kopp is General Manager for Fixed Water Mist Systems at FOGTEC.

Image courtesy of PRINOVIS

► **Retro Gravure Printing
Machines at PRINOVIS.**

So far all printing machines were protected by an Aerosol extinguishing system as local protection systems within the paint trays containing solvent based colours, which is automatically activated after fire detection and a manually operated CO₂ extinguishing system as additional safety measure.

Fire Incident with Tremendous Effect

On May 19th 2013, an alarm went off at the Dresden fire brigade. One of the six large retro gravure printing machines in the PRINOVIS printing group was on fire. Three fire engines of the fire brigade have been alerted as well as some voluntary fire brigades from the surrounding neighborhood.

A total of about 90 emergency services arrived at the scene and extinguished the fire within two hours. The cause of the fire was found to be a technical defect in the control box which is situated near the printing mechanism. The fire could spread easily due to the solvent-based printing colour that is used for the printing process.

The fire not only affected directly the printing machine, but in consequence also the production hall and stocks.

Even though the May 2013 fire in the large printing plant could be extinguished fairly quickly, the results for the company were devastating. One of its six retro gravure printing machines was completely destroyed. The cleaning and the clean-up measures after the fire proved to be time consuming and cost intensive. Fine soot particles had accumulated on the walls, ceilings, and technical equipment. In addition, the large quantities of fire extinguishing water had partially destroyed the paper stocks.

As a consequence of this fire, PRINOVIS decided to revise its fire protection concept. Together with its insurance company and the local fire brigade, the corporation decided to supplement the existing Aerosol and CO₂ local extinguishing systems, which are used to protect certain areas within the printing machines, with a water mist system. An extension of the CO₂ system was not taken into consideration. With a



Image courtesy of PRINOVIS

surface area of approximately 120 m x 60 m, the production hall is too large and spacious. At the same time, the company wants to keep the potential risk to human life at a minimum.

High Pressure Water Mist: An Advantageous Technology

High pressure water mist has been increasingly used in fire fighting since the early 1990s. Compared to other fire fighting methods, this technology provides many advantages.

High pressure water mist can be applied without pre-warning times. With just a small amount of water, it generates a considerable cooling and local oxygen displacement effect. It is safe to humans and the environment. Due to the small amount of water discharged, it does not have any serious impact on electric components, thus the risk of water damage is minimal. High pressure water mist partially washes toxic smoke particles.

All of this helps keeping the cleaning and clean-up measures as well as the renovation work after a fire incident to a minimum while assuring operational continuity. Another advantage is that water mist systems are space saving and can be integrated into existing machines and infrastructures at a later stage.

Water Mist System Standards and Approvals

Water mist systems are designed and approved based on internationally recognized standards, as the NFPA 750, the FM 5560 by Factory Mutual and the European CEN TS 14972 standard. Based on these international standards, national guidelines and standards have been development and published by organisations like VdS in Germany, APSAD in France, BSI in the UK and others.

All standards for water mist technology have in common that these standards do not prescribe the required nozzle type, droplet distribution, flow rate, nozzle spacing and discharge time, as standards for sprinklers or gas extinguishing system do. These parameters have to be individually determined by carrying out application related full scale fire tests to provide optimum protection of the respective risk.

In the past years numerous full scale fire tests have been carried out at independent fire research institutes and laboratories which have led to a broad acceptance basis of water mist systems as alternative to conventional systems.

For the protection of printing machines no general fire test scenarios exist. Fire test scenarios for machinery spaces exist,



◀ **Printing Machine**
Water Mist Fire Test.

but printing machines represent special fire risks, mainly due to the highly flammable solvents used in the printing process. Special fire test scenarios have to be developed with an independent fire test institutes and system approval bodies.

Printing Machine Protection Concept based on Full Scale Fire Tests

PRINOVIS developed jointly with its insurance company, the water mist manufacturer FOGTEC as well as the VdS, as independent inspection body and test institute, a specific fire protection concept for protection of their printing machines. The concept is based on fire tests developed in accordance with Annex B of CEN TS 14972 standard. The type and composition of the fire load, the ventilation conditions, and the acceptance criteria have jointly been defined.

Image courtesy of FOGTEC



The Smarter Way of Fire Fighting



High-pressure water mist systems for industrial applications, buildings, tunnels and trains

www.FOGTEC.com

FOGTEC Brandschutz GmbH & Co. KG | Schanzenstraße 19A | 51063 Cologne | Germany
Tel. +49 221 96223-0 | Fax +49 221 96223-30 | contact@FOGTEC.com



Please visit us at INTERSCHUTZ, Hall 13, Booth F38

Any and all conceivable fire risks in the surrounding area of a retro gravure printing machine have been taken into consideration in the fire tests that were conducted at full scale. The spillage of colours within two printing units, a leakage or rupture in the supply of lubricants or the burning of large amounts of paper within the printing machine were simulated in these tests.

The different test series were successfully completed, witnessed by VdS as third party, and confirmed the measures which were subsequently integrated into the fire protection concept.

A FOGTEC high pressure water mist system has been installed at three levels within the printing machines enclosures of 8 m width, 30 m length and 10 m height. The water mist system is complementing the previous local Aerosol protection.

A deluge system with more than 500 open nozzles has been installed. Every retro gravure printing machine is divided into three sections in which water mist can be released simultaneously. To achieve fast extinguishment, one of sections containing the paint mixing units is supplied with a mixture of water and AFFF additive.

Linear heat detectors are installed throughout the printing machines to permit rapid detection of a fire.

All of these measures assure that the water mist system is operating automatically on fire detection. The water supply has been dimensioned with 100% safety factor and 30 minutes autonomy, resulting in a water tank volume of only 29m³.

The water mist system at PRINOVIS has been retrofitted to the printing machines under running production infrastructure without hassles and minimal business interruption. Operational continuity was, thus, assured and maintained at all times.

Conclusion

A number of different industrial fire risks which traditionally have been protected with conventional gas extinguishing or sprinkler systems are today seen as excellent applications for water mist technology due to its efficiency, environmental friendliness and its safety for operation personnel. This application field is continuously growing for water mist technology.

Particularly for the printing industry high pressure water mist has demonstrated excellent extinguishing abilities for printing machine environment to the satisfaction of companies as PRINOVIS as well as to their insurers, assuring best possible fire protection to their assets.

Partly higher initial investment cost than conventional technologies and the application related full scale fire test requirements request for proper evaluation of the suitability of water mist for the application. Users, insurers and fire experts around the world today know and acknowledge the benefits of water mist and approach system manufacturers to jointly develop fire protection concepts based on this advantageous technology.

 **For further information, go to**
www.fogtec.com



The detector that sees everything

- Detects flames from any fuel source
- Works through glass
- Immune to films of oil, dust, water and ice
- Superior resistance to false alarms
- Suitable for hazardous applications



T +44 (0) 1462 444 740
E sales@ffeuk.com
W www.ffeuk.com

Focus on Cable Testing and Certification

While the cable industry has stringent safety standards across the world, pockets of poor professional practice in cable manufacturing, trading, specification and procurement are at large in many areas of the marketplace.



Glynn Stainthorpe

Unfortunately, there are a number of factors that can lead to this. The fact that any cable manufacturer can self-declare its product in some territories means safety and quality are interpreted differently. For example, if a cable is marked with only a standard number or product code, there is a high probability that nobody other than the manufacturer has examined that cable.

When copper prices shoot up, manufacturers may be tempted to save money by making cables as close as they can to the minimum requirements. In some such instances the copper conductor may be deliberately undersized. Other common problems include non fire-resisting sheathing, short life materials, insufficient or poor quality armouring and low insulation resistance.

This urge to cut corners then pervades across the entire supply chain.

Those specifying cable will often work to the tightest size tolerances and the customer will shop around for the cheapest price. With everyone trying to save their few per cent, when the end user finally

gets the cable product in their hands, they could be looking at a serious problem without realising it.

This has been the case in a recent multi-million dollar cable recall in Australia. A taskforce comprising of 21 consumer agencies and regulatory bodies has been put in place to source, destroy and replace around 2,500 miles of potentially hazardous cable across five states before it becomes a fire or electrocution threat. The distributor of the cable product, which originated in China, is now facing criminal proceedings and installers may have to foot the bill for rework. In this case, when the cable was first supplied to the hardware chains and electrical wholesalers it came with declarations that it met Australian standards, but later testing found that it did not.

The repercussions of using faulty cable can have devastating consequences. It could be the cause of a building fire for example, or when in a fire, faulty cable could fail to manage power supplies and control circuitry for the emergency systems, preventing a successful



Glynn Stainthorpe is Director of Business Development at the British Approvals Service for Cables (BASEC).

Image courtesy of BASEC

evacuation. Under cable test conditions, these types of fire cable should remain operational for a maximum of 120 minutes. However, some of the fire cables BASEC has tested lasted only two minutes.

So, why would cable buyers take such a risk?

The main issue is cost. What may seem like a small price to pay for reassurance, when bottom lines are squeezed there is always the temptation to go for the cheapest option.

Insist on independent third party testing and certification

BASEC works across the globe to educate regulatory bodies, utilities, civil and defense authorities, specifiers, contractors and the public on the dangers of using unsafe, non-approved or counterfeit cables and why third party assurance is vital.

Any third party conformity assessment, such as testing, inspecting and certification, of cable products, manufacturing processes and factory surveillance is ultimately about protection – to minimise the threat or harm to society and the environment. It also provides a level of reputational and commercial protection for manufacturers and traders.

Unlike many commercial certification bodies, BASEC only tests and certifies cable. BASEC has its own world-class cable testing laboratory, and as a non-profit organisation it is primarily concerned with actively educating the marketplace about the dangers of faulty cables.

Type testing isn't on-going quality assurance

One common misunderstanding among fire engineers is that when cable product is type tested, it doesn't mean that it is an independently approved cable. All that type testing confirms is that a particular cable sample met the test requirements on

a particular day, but this doesn't give assurance of ongoing production or production quality. There is nothing stopping a manufacturer from producing a 'golden sample' to get a favourable type test report. It is recommended that a manufacturer has type testing repeated every three years, however BASEC has seen type test reports being touted round that are many years out of date. The advice is to make sure a cable

product has ongoing third party approval, not just a type test report, and to make sure this is no less than three years old.

Also in terms of Quality Management Systems, BASEC's view is that general management system certifications don't provide sufficient scope or detail to ensure ongoing quality in cable production, something that only product certifications can provide. So management system certification on its own does not result in BASEC approval of any cable, as no testing is involved. Manufacturers with only these certifications are not permitted to mark their cable with the BASEC mark.

These stringent rules ensure the BASEC mark is synonymous with safety.

To gain the BASEC mark, cable is approved to a full suite of manufacturing standards rather than just to one particular test. To initially gain product approval the manufacturing facility must be successfully assessed with samples of the cables in question subjected to the full range of tests specified in the standard including the dimensions and materials of a cable, and specific tests to prove the construction and performance. Not until all tests are passed, and the manufacturer's production facilities, processes, and their own testing capabilities have been verified, is a product marking license awarded, permitting the manufacturer to display the BASEC mark on their products.



Image courtesy of BASEC



Image courtesy of BASEC

Consistent surveillance is key

Each approved cable is then regularly retested up to four times a year by BASEC to ensure ongoing conformity. Manufacturers have to adhere to strict certification rules and all cable produced must be tested by the manufacturer before release for sale. If there are any problems or changes that might affect cable quality the manufacturer is obliged to notify BASEC immediately.

BASEC approval also incorporates surveillance testing where assessors visit each manufacturer several times a year to select samples for surveillance testing (up to 200 per year) for testing which is done in parallel with the audit of production processes and management systems.

Many unannounced full factory audits are conducted on BASEC clients each year and if we find anything suspicious, investigations will be launched and certifications will if necessary be revoked. It is important to highlight, we are not

there to catch anyone out. We are working with manufacturers to ensure the quality of their cables and the responsibility is on them to make products that meet and conform to a standard. We maintain a professional relationship with them, which also involves complete confidentiality. Our assessors meet a lot of people and see a lot of manufacturing processes in markets around the world and at all times we are representing BASEC as an independent approvals service maintaining an international reputation.

Our message to cable buyers is always specify an independently approved cable and check the cable markings on delivery and before installation. If suspicious cable is found, contact BASEC or your local regulatory authority for advice.

Public warnings

If a suspect cable product is found in the marketplace, BASEC will test the it for faults. The manufacturers and

companies involved in the supply chain are then contacted to ensure they are aware of the faults and if necessary the product may be recalled by the manufacturer and destroyed. Any manufacturers, wholesalers, distributors or installers who persistently sell or use dangerous, non-approved cables, will have their details passed to the relevant trading standards or health and safety regulatory bodies for that country, and public warnings will be issued to the media. However, BASEC hopes that by highlighting third party assurance issues to the industry, companies will voluntarily use safe and approved cables. The primary objective is to spread our message widely so that everyone in the supply chain can make an educated decision on which cable products they use.



For further information, go to
www.basec.org.uk

AN EVOLUTION IN FIRE DETECTION STARTS NOW

SOTERIATM
DETECTION > DEFINED

WITH THE INTELLIGENCE OF
 coreprotocol



16-18 JUNE
FIREX 2015
EXCEL LONDON

VISIT US AT
STAND G100
FOR MORE INFORMATION



4 HOURS FIRE-RATED DUCT

- Non-coated
- Light weight
- Quick turnaround time
- 4 hour stability
- 4 hour integrity
- Up to 3 hours insulation
- Fully Certified to BS 476 part 24 by Warrington Fire Research
- Firas Accredited
- EN 1366-1 and EN 13501-4 Certified

GUARANTEED
LEAST EXPENSIVE
TO MANUFACTURE/
INSTALL

INTRODUCTION

S·A·F·E·4 is the most highly accredited fire rated duct system available on the market today.

S.A.F.E.4 fire-rated duct has been designed to cater for the various fire safety requirements required in the building industry today.

The system has been comprehensively tested by Warrington fire research department, achieving 245 minutes, the highest fire rating achieved by a ventilation duct.

The strictest procedures in the fields of manufacturing, installation and inspection are adhered to. Certification on completion of works is provided by our trained inspectors.

S·A·F·E·4 i - up to 3 hours insulation

S·A·F·E·4 i ductwork offers insulation of up to three hours at 1200°C in applications where an insulation criteria is required. Thickness and density is calculated by the type of system and time period required.

APPROVED BY CIVIL DEFENCE

- UAE
- Saudi Arabia
- Oman
- Qatar

P.O. Box 62547
Sharjah, UAE
Tel: +971 6533 6355
Fax: +971 6533 3723
Email: info@cvshvac.com



P.O. Box 40015
Doha, Qatar
Tel: +974 4460 3825
Fax: +974 4460 4413
Email: info@cvshvac.com

For Inquires Contact: Karim Badruddin ▪ **Mobile:** 971 55 810 6613 ▪ **Email:** karim.badrudin@cvshvac.com



Fire Engineering Versus Prescribed Fire Protection

When I began practicing as a fire protection engineer, the codes that were used in the US were referred to as performance codes. This was primarily due to the fact that the codes did not specify a particular wall assembly as being 200 mm (8 inches) of masonry block; but instead, referred to such a wall as being noncombustible with a fire resistance rating of at least two hours.



William E. Koffel
P.E., FSFPE

The codes prescribed the fire protection measures that were to be implemented to achieve the level of safety intended by the code. Unfortunately that level of safety was often undefined by any stated objectives or metrics.

As the practice of fire protection engineering has become more quantitative, so has the development of true performance codes. A true performance code, and therefore a true performance-based design, does not start with any prescribed solutions or requirements. Instead, the stakeholders on the project determine the scope of the project and define the level of safety with goals, objectives, functional statements, and performance requirements. As the design progresses, quantitative methods are used to determine if the stated level of safety is provided by the design.

Prescriptive Code Approach

Before looking at performance-based design, let's review the prescriptive code approach. In many parts of the world, especially where the base code is a performance code, the prescriptive approach is commonly referred to as a "deemed to satisfy" document or solution. When designing a building using the prescriptive approach, one starts by determining the occupancy classification(s). Once the occupancy classification is determined, the prescriptive code identifies the requirements for the project. At times the code may offer more than one approach such as an approach that includes automatic sprinkler protection and one that does not. Such codes also typically allow for equivalencies or alternative

methods to achieve the desired level of safety. There are many benefits to the prescriptive approach in that the design is often faster and less expensive. From a code enforcement standpoint, ongoing enforcement is easier in that most buildings in the same occupancy classification will have the same features. However, the prescriptive nature of the code can also inhibit innovation and new technology especially, if the design team or regulatory authorities do not accept equivalencies and alternative methods.

When the primary code is a prescriptive code, such as those in the USA, the development and maintenance of the code is both time consuming and laborious. In April 2015, the International Code Council held over 160 hours of committee hearings on just a portion of their family of codes. Those hearings are just the first step of a two-step process which will be completed later in the year and then the remainder of the codes will be processed using a similar schedule in 2016. However, it should be noted that there were four public proposals to modify the ICC Performance Code during the development cycle for the 2015 Edition and no public proposals for changes during the 2012 Edition cycle.

The reason so many resources are devoted to the prescriptive code is that interested parties want the code to recognize their products and approaches since that is the primary way buildings are designed. If a product or approach is not recognized in the prescriptive code, competitors have a distinct advantage. In other words, many design decisions are actually made in the code development process and are not project specific.

William E. Koffel is
President of Koffel
Associates, Inc. and Chairs
the NFPA Correlating
Committee on Life Safety.

Performance Approach

Many years ago automatic sprinkler systems were designed using the pipe schedule system. Based upon the hazard being protected, sprinkler system piping was sized based upon the number of sprinklers to which the pipe supplied water. Today, automatic sprinkler systems are designed to provide a certain density over an anticipated area of sprinkler operation. The design densities have been verified by fire tests as being capable for controlling, or in some cases suppressing, the anticipated fire. While not identical to the difference between prescriptive and performance based fire protection engineering, the evolution is similar.

Continuing with the sprinkler analogy, the goal is to control or suppress the fire. The objective is to design a system that will deliver a density that has been determined to provide either fire control or fire suppression. How one sizes the pipe, selects the pipe to be used, and locates sprinklers is determined by the designer of the system, within some limitations provided by the design standard, in this case NFPA 13, Standard for the Installation of Sprinkler Systems.

Over the years, structural engineering has experienced the same evolution. What started as load tables has evolved to a design process giving the design engineer far more latitude provided the design is capable of supporting the design load. Similar advances have been made in seismic design as our knowledge and ability to measure critical factors of performance have improved. It should also be noted that structural engineering has developed a classification system different from the traditional occupancy classification, one that assigns an importance factor to different uses. This same "importance factor" has been incorporated in the ICC Performance Code for all aspects of the design.

While the benefits of the prescriptive approach have been identified above, one of the benefits of the performance approach is that fire protection is designed for the specific project. The level of protection provided is consistent with the goals and objectives identified by the stakeholders. While the initial design may be more costly and take longer, it is anticipated that the fire protection provided will be done in a more cost-effective manner. While the prescriptive approach

does not preclude the design team from communicating with other interested stakeholders, the performance approach requires that the stakeholders communicate throughout the design process. As such, the owner and occupants should have a better understanding of the level of safety provided and what might be expected should a fire occur.

Tall Timber Buildings

To better understand the difference between prescriptive and performance based designs, let's use an issue that is confronting many throughout the world. With a sustainability goal in mind, many are interested in building taller timber buildings, typically of cross-laminated timber (CLT). Such buildings have the structural capability to carry the anticipated load and it has been reported that construction time can be decreased. However, many are concerned about the fire protection aspects of building tall timber buildings.

While the typical height of many of the recently constructed CLT buildings is 9-10 stories, some concepts and designs as high as 40 stories have been documented. Using the prescriptive approach, the height of such buildings is typically restricted to 4-6 stories depending on the occupancy classification for the proposed use of the building. Therefore, in areas where the primary code is a prescriptive code, the equivalency or alternative method options must be used for these taller buildings.

Whereas most prescriptive codes do not contain well defined goal and objective statements, a common method to determine equivalency is by a comparison to the prescriptive code requirements. Unfortunately, the existing allowable height and area tables in prescriptive codes generally lack a sound technical basis. Given those limitations, how does one determine equivalency for a taller timber building when the table prescribes a specific height, number of stories, or both?

With a performance-based design there would be no preconceived maximum height or number of stories for tall timber

buildings. Instead, there would be performance statements agreed to by the stakeholders that might address life safety, property protection, and continuity of operation goals. Using the information that is available to the design team, a design can be developed using CLT for the proposed use of the building. Quantitative methods (fire test data, computer fire modeling, etc.) can be used to demonstrate that the performance statements have been met. At the same time, the project can meet other stated performance requirements such as sustainability, structural design, and shortened construction times.

During a presentation on the subject of tall timber buildings at Fire Safety Asia Conference in Singapore (2014), one of the participants discussed a tall timber project designed using a performance code in Australia. One of the challenges for that particular project was the review and approval of the design. While it is easy to say that this should not be a challenge since the regulatory agencies should be included as a stakeholder from the beginning, it must also be recognized that the verification of the performance-based design includes quantitative methods and the regulatory agency personnel may not be familiar with such methods. As such, and as was done for the project in Australia, a third party agency was utilized to review the project and present recommendations to the regulatory agency.

Summary

Performance-based design has been increasing in use and popularity for the last 20 years. The use of performance design is more prevalent in areas where a performance based code is the primary code. Where the primary code is a prescriptive code, many owners and design professionals are likely to rely on the prescriptive code, possibly with the use of equivalencies or alternative methods.



**For further information, go to
www.koffel.com**

While the typical height of many recently constructed CLT buildings is 9-10 stories, some concepts and designs as high as 40 stories have been documented.



The ultimate knockdown tool

DRY SPRINKLER POWDER AEROSOL

The DSPA 5 is a hand-grenade like device. It is an ideal knockdown tool designed for fighting fires in closed or partially ventilated environments.

It is light in weight (5.4 kg.) and is activated by means of a starter mechanism, allowing the device to be thrown towards the seat of the fire from a safe distance. As an intervention tool it can be deployed on arrival as a first attack against the fire. This will fully utilise the time taken accessing the water supply, donning in BA and laying out the hose reels.

When activated, the aerosol gases suppress the flames, lower the temperature in the room and reduce the fire to glowing embers. It will prevent flashover and backdraft. This allows the fire fighters to enter the room safely, to fight the fire effectively and search for survivors. The extent of water damage is substantially reduced.

The DSPA 5 is designed for attacking A, B, C and F type fires in rooms of up to 150 m³, although the units can be combined to operate in larger spaces. For example, five DSPA 5s will work together for a space of 300 m³.

PLEASE VISIT US:
Hall 24, Stand D15



DSPA.nl

Develops, produces and supplies innovative
aerosol fire extinguishing systems

+ 31 24 352 25 73 info@dspa.nl www.dspa.nl

Further International Dealers Invited

Pedestrian Modelling in a Fire Environment

As in many parts of the world, Australia has a two-prong approach to the fire safety design of buildings. The first is a traditional prescriptive approach and the other is an engineered performance based approach. In both cases the National Construction Code's Building Code of Australia (BCA) governs building design. Therefore the BCA specifies the rules of engagement in our performance-based design environment.



Jonathan Barnett
PhD, FIEAust, FSFPE, MSFS



Blair Stratton
MIEAust, MSFS

Jonathan Barnett is
Technical Director of
RED Fire Engineers.

Blair Stratton is
Manager of Victoria
RED Fire Engineers.

The performance-based environment is based on Objectives and Functional Statements leading to Performance Requirements. These requirements are specified by the Australian Building Codes Board (ABCB) and generally adopted by each state and territory. These are not just for fire but also for all aspects of building design including, for example, structural elements. A typical Objective is "safeguard people from illness or injury due to a fire in a building" and the associated Functional Statement is "allow occupants time to evacuate safely".

There are two ways of achieving this, one of which is the traditional prescriptive approach called "Deemed-to-Satisfy" (DtS). By definition, meeting the requirements of this approach meets the Objective. On a side note, there is no guarantee that the DtS approach will actually meet the objective, just that it is assumed to do so and so codified by legislation. The DtS approach is often based on a historic solution, which over the years appears to have been a successful methodology for achieving society's expectations. However, it may fall apart as new materials of construction are introduced along with new design approaches and applications.

The other way of meeting the Performance Requirements is through the use of an Alternative Solution (AS). The AS may be shown to be adequate simply through an equivalency evaluation to the DtS; in which case it has the same safety limitations, advantages and shortfalls of the DtS approach. Alternatively the AS

may be shown to meet the Performance Requirements through engineering analysis, as would be found in a Verification Method, Expert Judgement or using appropriate Documentary evidence.

Usually, the design process follows the International Fire Engineering Guidelines that culminates in the production of a Fire Engineering Report (FER) that justifies and documents the AS. Once the building is built the systems are usually checked through a commissioning process.

This paper discusses a case study where a building was built incorporating a complex AS into the egress design, yet the system was never properly implemented. Evaluating the existing design and programming the building control systems based on computer simulation was the highlight of this project.

Case study – Improving egress from an existing high rise building

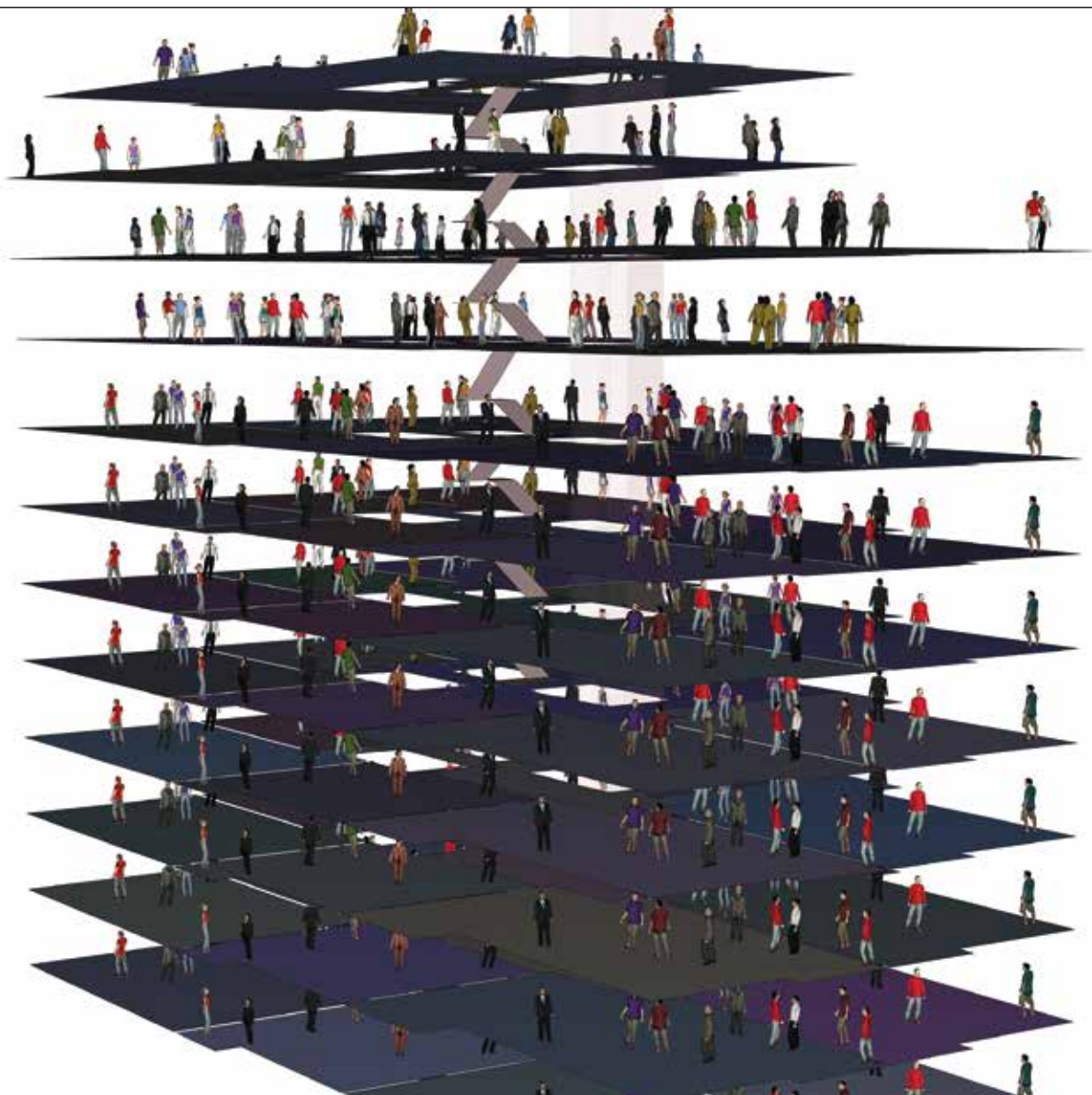
A thirteen-storey high-rise building in Melbourne was designed in the early 2000's using an Alternative Solution. The BCA's DtS provisions specified that two pressurized, fire isolated stairs were required. The FER provided justification for the use of a single non-pressurised stair to serve the upper levels, with the lifts being available for evacuation from the 'fire floor' (the floor of fire origin, which in practice meant the floor where the fire was first detected by one of the building's fire detection systems). The FER required additional active fire safety systems beyond that required by DtS. These

included two separate sprinkler zones on each floor (to distinguish between fire in an apartment versus one in the common corridor), addressable smoke detectors throughout the building including apartments, and corridor exhaust and pressurization systems.

The FER outlined a strategy whereby on fire detection (unless sprinklers in a common area activate), both lifts go to the ground level to let passengers out. After that, one of the lifts (selected at random) is available for calls to the floor of fire origin, if it's on levels nine to twelve only. The other lift was to remain at the ground level for use by the fire brigade. Levels ground to eight are provided with two stairs hence the lifts were not required to serve those levels.

◀ Figure 1 – Lift for Emergency Evacuation.

▼ Figure 2 – Pathfinder Model.





take to evacuate if all requirements of the original AS had been implemented correctly. We then modelled the evacuation time for the new evacuation scheme. The new scheme had the following main features:

- Lifts are available to all floors served by the single stair during any fire scenario, except for a confirmed fire in a lift lobby. This is instead of the lift only serving the level of fire origin. This reduces confusion to occupants yet had minimal impact on the evacuation time from the fire floor and actually decreased the overall evacuation time for the building.
- Evacuation signals cascade to two levels above the floor of fire origin and one below, at thirty-second intervals. This is in line with industry practice that had been implemented in the original construction. The original FER required a single 120-second delay between the first floor being notified and occupants on all other floors being alerted.

The results of the egress modelling is summarized below left.

Interestingly, although any occupant on the upper four levels could now use the evacuation lift, the pedestrian modelling showed that the evacuation time was not increased from that which was predicted based on the original scheme. This was because the cascading alarm system effectively provides occupants of the floor of fire origin the ability to wake up first, start moving and get 'first dibs' on using the lift to evacuate.

The end result is a building that meets the objective of the BCA with minimal disruption to its occupants.

Conclusion

In Australia the use of a performance-based option often allows innovative and flexible design. Modern analytic techniques using computer simulation of fire and egress often play a key part in the performance-based design world. This paper discussed how the use of a modern egress modeling tool justified deviations from the original design allowing continued occupation of an existing building with no disruption and little expense.

 For further information, go to www.redfireengineers.com.au

The AS required the lifts to be used for evacuation (see Figure 1) from levels nine to twelve only, and only for the level of fire origin. For example, a fire on level nine would require the occupants of levels ten, eleven and twelve to use the stairs to evacuate.

Whilst carrying out some upgrade works the building's owners found that the AS had not been implemented correctly. The main issue was that the lifts had never been programmed to provide egress during fire. This needed to be urgently rectified to provide a second means of escape from the high-rise parts of the building (the high-rise parts of the building started at level nine where the height exceeded twenty five metres).

Due to the complexity of the system the residents did not understand what evacuation options were available to them during a fire. The AS did not define any methodology of notifying occupants which level the fire had actually been detected on, or which system to use (stairs, lift or both).

Therefore, residents might wait in the lift lobby for a long time before realizing

that the lifts were not available for egress and that they should either retreat back to their apartment or use the single fire isolated stair. In practice, the confusion and lack of training and information meant that all able-bodied residents would try to evacuate via the single stair.

Because the lifts were not used during evacuation this placed more reliance on the single non-pressurised stair. This increased the time for evacuation, and ultimately the risk to occupants.

The owners' main objective was to make use of the existing systems as far as possible, whilst simplifying the evacuation scheme and meeting the performance requirements of the BCA.

We evaluated the situation and proposed to alter the lift operation to allow occupants on any of the high-rise levels (levels nine to twelve) to use the lifts during fire regardless of the floor of fire origin.

To achieve these goals we carried out evacuation modeling using the software package Pathfinder (see Figure 2) to benchmark how long occupants would

Fire origin	Lift sequence	Time to clear each level (s). Floor of fire origin in red.				Total time to evacuate building (s)
		Level 9	Level 10	Level 11	Level 12	
Level 9	Lift serves L9 only (original sequence)	611	727	716	745	989
Level 9	Lift serves Levels 9-12 (new sequence)	611	662	720	779	900
Level 10	Lift serves L10 only (original sequence)	810	606	716	745	995
Level 10	Lift serves Levels 9-12 (new sequence)	642	606	675	735	923

GIELLETM

INDUSTRIES

ENGINEERING / MANUFACTURING / INSTALLATION / MAINTENANCE

MARITIME - OIL&GAS - DEFENSE - AVIATION - INDUSTRIAL - CIVIL APPS



Door Integrity Test
(door fan test)



Halon banking



Co₂ System



HFC-125 / HFC-23
Halotron



Gielle Industries - Via Ferri Rocco, 32 - 70022 Altamura (Ba), Italy
www.gielle.it - info@gielle.it - tel. +39.080.311.8998 Fax +39.080.310.1309



GIELLE
ANNIVERSARY
1965-2015

Follow us on:

facebook

twitter

skype

YouTube
Broadcast Yourself™

Fire-Resistant Glazing: An End to Design Compromises?

When glass is required to stand up to fire, this has traditionally been associated with aesthetic and other design compromises. But have the latest advances in fire-resistant glazing technology consigned these to the past?



Steve Bond

Steve Bond is Customer Support Manager – Fire at Pilkington UK Limited.

Steve has been employed by the NSG group for 30 years. For the past 15 years, his focus has been the fire-resistant glazing business, initially as part of the R&D function with a focus on new product development and evaluation and latterly as a provider of technical knowledge and support to the business' commercial function.

Arguably the first consideration for designers of the built environment, before aesthetics or even functionality, is to provide safe space for a building's occupants and contents.

When it comes to defending a property against fire, design plays a crucial role, ensuring that a blaze is not able to spread but is instead contained in a single area, limiting damage while allowing safe egress for occupants and entry for emergency services personnel.

Achieving this means placing fire-resistant physical barriers throughout a building, and especially around exit and entry routes.

The challenge for designers and specifiers is that this need for robust physical barriers can seem to contradict some of the principles of contemporary building design, which often call for light, airy spaces that provide a sense of openness by providing extensive lines of sight through buildings.

Glass has become ubiquitous in modern building design precisely

because it offers a barrier to the elements and to external sounds while still allowing light to flood into interior spaces and uninterrupted views to be had both outwards and inwards. However, it is now often required to play the same role from a fire-safety perspective, and this places much higher demands on glazing in terms of its physical properties.

Flame resistance and insulation

Fire spreads through a building via three distinct means: convection, conduction and radiation.

Convection – whereby very hot air from the source fire moves upwards and outwards, potentially igniting surrounding materials – is the primary route and therefore the most dangerous of the three.

However, conduction and radiation can be equally hazardous if the right precautions are not taken. Conductive

▼ Fire resistant glazing inside Dusseldorf Airport.



Image courtesy of Pilkington

materials, especially metals, can absorb heat and transmit it to other rooms where it can cause new fires to break out, while radiation transmits heat through rays similar to sunrays, requiring no physical contact in order to transfer large amounts of heat.

Modern fire-resistant glazing systems can provide complete protection against convection, conduction and radiation – whether as curtain walling, or internal doors or fire screens – for up to three hours.

There are two main performance categories for fire-resistant glass: integrity and insulation.

Integrity is a measure of the length of time over which the glass can prevent flames, smoke or hot air from travelling from one space to another.

This is tested by subjecting glazing systems to a standard time/temperature curve according to either British Standard BS 476-Part 20-22 or European Standard BS EN 1363 series. Depending on its performance in these tests, each system is classified as having attained an integrity test time of 30, 60, 90, 120 or even 180 minutes.

Insulation, meanwhile, assesses the ability of the glass to prevent significant heat transfer from the fire side to the non-fire side, with the surface presented towards the non-fire side not exceeding given thresholds for average and point temperatures on the unexposed face.

This is particularly important in spaces such as stairwells and corridors, where not only does the space need to be protected from sources of flame, but also be kept as cool as possible to allow safe passage for escaping occupants.

The whole picture

There is no hard and fast rule for the fire resistance requirements of any particular piece of glass in any given setting. Instead, the appropriate level of protection must be provided in line with the detailed fire strategy for the building in question. As well as the more obvious considerations such as providing separation between different floors and areas within a property to contain the spread of fire, the strategy will also take into account things like the mobility of the people that need to escape a blaze.

For example, for a corridor in an office building where all occupants will be mobile and able to evacuate the building quickly, a lower level of protection may be needed

Case Study

Pilkington Pyrostop® helps deliver fire-protection package at parcel hub

A good example of the design applications of clear fire resistant-glass came when a major logistics company commissioned a new multimillion-pound parcel hub.

The business wanted to ensure a close connection between the office workers at the facility and those working on the warehouse floor. A key part of this was allowing lines of sight between the two spaces so that all employees have a feeling of belonging to the same operation.

Of course, warehouses such as this are subject to strict safety regulations, which require that they be separated from adjoining areas by fire-resistant screening.

Because the offices are part of an escape route from the main warehouse, there needed to be a fire resistant barrier between the two spaces that could stand up to exposure to fire for at least 30 minutes to allow safe evacuation in the event of a blaze. This meant that the wall of glazing the architect wanted to place between the two spaces would need to be able to maintain integrity and act as a protective shield for more than half an hour.

The solution specified was Pilkington Pyrostop® fire-resistant double glazing units, glazed in steel frames, which were also rated to ensure the system would maintain integrity and insulation for the required period.

The level of protection this screen needed to provide presented a significant challenge from a materials technology perspective. The wall of glazing is 215 sq metres in size, and it needed to maintain integrity against extremely high temperatures and flames for more than half an hour.

The units used in the project consisted of a pane of 6mm toughened Pilkington Optitherm™, a 12mm argon-filled cavity with fire-resistant steel spacers, and a 15mm laminated layer of Pilkington Pyrostop® 30-10 glass, classified to deliver protection from fire, smoke and radiant heat for at least 30 minutes, chosen for the performance achieved after rigorous testing and quality control.

Pilkington Pyrostop® glass is a multi-layer laminated glass, comprising intumescent interlayers sandwiched in between glass layers, which expands and becomes opaque when exposed to heat. This intumescent interlayer means that the glass becomes highly resistant to flames and the passage of heat as soon as it is exposed to fire.

As well as offering fire protection, the glass also needed to be thermally insulating, as temperatures on the warehouse floor are often lower than those in the adjoining office space.

The layer of Pilkington Optitherm™ is included to help with energy saving as it is optimised for thermal insulation, featuring a low emissivity coating that delivers a low U value, reducing the rate at which energy passes from the warm to the cold side of the glass.

The wide availability of such advanced materials has opened up a huge number of options from a design standpoint. As a result, facilities such as this – where safety is obviously the number one concern – can benefit from added natural light and improved integration of spaces that would otherwise not have been possible.



PILKINGTON



◀ The interior of the Bundestag Building, Berlin.

visually screen off areas in order to protect them in the event of fire, even where critical escape routes are involved.

Of course, it is important to ensure that tested and appropriate framing is used, as the fire rating is based not only on the glass but on the performance of the system as a whole. However, as technology in glass has advanced, so has that of frames so that specifiers and designers now have a wide variety of different designs at their disposal to achieve the right appearance.

All-round performance

There is a lot more to selecting the right pane of glass than simply the way it looks and energy performance is also a key concern. Where large areas of glass are to be used in a building, careful consideration must be given to the amount of heat it will allow to leave the building and the amount of the sun's energy it will let enter, as these properties have a significant effect on the ease and cost of maintaining a comfortable environment for occupants.

Modern fire-resistant glass has also removed the need for compromise in these areas when it comes to delivering fire-safe buildings, as it is now available with the latest low-emissivity and solar control coatings to ensure it also delivers excellent energy performance.

The impact of these advances can already be seen in many high-profile projects around the world, including at the Bundestag building in Berlin and the refurbished Dusseldorf airport. The glazing for such prestigious landmark buildings is expected to be long-lasting and of the highest quality and, in today's age of instant digital communications, appearance has never been more important.

The benefits are not limited to high-end architecture either, as the proliferation of glass as an option for safety-sensitive settings has made these products available in high-quantities for mainstream use. The result? Lighter, brighter, more energy efficient spaces that also deliver high levels of protection should a fire break out.

➔ For more information, go to www.pilkington.co.uk

than for an escape route in a hospital or care home where those exiting are likely to need much more time for a safe egress.

Getting these decisions right is up to the designated 'responsible person'. This is an individual that is nominated to take responsibility for ensuring the building is safe by design. The role is typically taken on by a facilities manager or health and safety officer.

This individual assumes liability should the strategy be inappropriate or incorrectly implemented. While the person themselves does not need to be an expert in fire safety, they take responsibility for consulting with those who are in order to ensure that a robust and reliable strategy is in place for every eventuality.

Aesthetics

Traditionally, by far the most common form of fire safety glass was wired glass, in which a mesh of metal wires are embedded in a pane of glass to ensure it maintains integrity in the face of high temperatures.

This product is a common sight in many older buildings and still sells in high volumes thanks to its affordability and long-standing association with safety-sensitive projects. However, few would claim it is the best-looking or best performing solution.

Today, fire resistant glass is mostly completely transparent and makes use of intumescent interlayers placed between

two or more panes of glass to provide integrity and insulation.

In more basic clear glazing products, they serve the same basic purpose as wired glass – to maintain integrity. Some provide an enhanced level of integrity using intumescent technology while also providing an intermediate level of insulation. In more advanced insulating products, the multi layers are designed to expand sequentially when exposed to heat to provide an opaque, robust and heat-resistant layer.

There can be benefits in some scenarios to using the more basic systems which maintain transparency when exposed to fire. For example, where insulation is not a concern and only integrity matters, glass that stays clear when hot can give emergency services crews a better view of the inside of the building.

However, for more robust protection, intumescent interlayers become necessary. Interlayer technology has progressed to the extent that large panes of glass which are completely transparent when cool can provide insulation against very high temperatures for up to three hours while permitting a very low level of heat transmission.

This means that floor-to-ceiling transparent glass screen can now serve effectively the same purpose as a brick wall, and the design implications are significant. No longer is there a need to

Image courtesy of Pilkington

THE SKY'S THE LIMIT WITH **SPP PUMPS**



FIRE PROTECTION

PRECISION ENGINEERED FOR WHERE IT REALLY MATTERS

Fire is one of the greatest dangers we face. It will take human life in moments. It will devour critical infrastructure in minutes. That is why fire protection is so critical to the landscape of skyscrapers we see around the globe - and also why SPP Pumps is gearing up to showcase its range of fire pumps at this year's Interschutz, taking place from 8th to 13th June 2015.

TO FIND OUT MORE ABOUT SPP PUMP'S RANGE OF FIRE PUMPS, VISIT THEM IN

HALL 13, STAND G37 AT THIS YEAR'S INTERSCHUTZ





Everlux®

Photoluminescent safety signs

Visit us at:



Hall 13
Stand G63



FIREX International
FIRE PREVENTION, DETECTION & PROTECTION
16-18 JUNE 2015 EXCEL LONDON UK

Hall S1
Stand E95



www.everlux.eu

Candles to LEDs – the latest technology is improving safety

Emergency lighting systems are compulsory in all public buildings and workplaces so that in the unlikely event of a power failure people can find their way around safely. Safety lights and escape route lights may also provide enough light to shut machinery down, use the escape routes and give quick access to fire extinguishers and other safety equipment. They prevent panic and ultimately can help save lives.



John Kears

Many of us will give little or no thought to emergency lighting and for the majority the only time that we will need to find an alternative source of illumination is when the lights go out at home and we need to rummage around and find a torch (hopefully with a working battery) or the box of matches and the candles that you had for Christmas. But even at home, once that alternative light source has been located and powered up, a sense of calm prevails. Hopefully not many of us will experience a loss of light due to power failure in a large public building such as a theatre, cinema or department store. It is probably something we don't want to consider but it is exactly this scenario, of hundreds of people in an unfamiliar environment, taken unawares and wanting to reach safety, with which emergency lighting is designed to cope.

Across Europe and the rest of the world there is an extensive range of legislation with emergency lighting solutions being required to function from 30 minutes to 3 hours dependant on local legislation to the size and nature of the building but whatever the legal requirements emergency lighting has three main roles. But let us be clear from the start, we are talking about emergency lighting, not standby lighting which is something completely different!

The primary role of emergency lighting is anti-panic, if people are plunged into darkness it will only take a very short time before levels of anxiety will rise and all too soon panic behaviour will be seen. Even the smallest amount of light is enough to provide reassurance, prevent panic and hopefully lead to a successful evacuation.

Across Europe the general requirement for the floor level emergency lighting is 0.5 lux which in layman's terms equates to the amount of light you would see if you outside at night under a full moon. Once calm has been restored the next function of the emergency lighting is to illuminate the escape routes so that people can exit to a safe area. As this requires people to start moving a high level of light is required, generally 1 lux and the light source for this will usually be ceiling mounted. The lighting for these exit routes needs to be homogenous with no bright spots or shady corners and consideration also needs to be given to the colour rendering of the light, usually RA 40. It is assumed that once the regular light source has failed there is no alternative ie the fact that an office may have floor to ceiling windows is of no consequence when planning the emergency lighting, however a large, open plan office will not require as many emergency fittings as you would find in a stairwell where there are numerous changes of both level and direction.

The third and final element of emergency lighting are the ever present, and often permanently illuminated exit signs. These will usually be lit on a permanent basis as evacuation of a building may be required even if the lighting has not failed. In some high risk areas, such as chemical plants, manufacturing units etc there may be an additional element of emergency lighting that is required to ensure that equipment and processes can be shut down safely before the area is cleared and these will require an even higher light level and specialist planning and installation.

John Kears is Product Manager for Emergency Lighting at Tridonic.

The advance of technology

Changes in the provision of emergency lighting are mirroring those found in the regular lighting solutions and new builds are being fitted with both systems being based on the latest LED solutions and more and more refurbishments are also opting to utilise this highly effective technology.

Using fluorescent luminaires for emergency lighting presents a number of challenges. Whilst these fittings will function well from the mains as soon as they have to operate from their smaller, integrated but less powerful emergency battery their performance is reduced and there is also a time delay in the unit emitting its full lumen capability (which impacts on the Emergency Lumen Factor). Not only that but from an installation point of view each different lamp be it 8, 13, 28 or 35 watt will require fitting with a different emergency battery unit which makes for a more complex and costly installation and maintenance programme. Adapting the fluorescent bulbs to cope with the switch to battery power is a complex process, the lamp can be damaged and this again has cost implications.

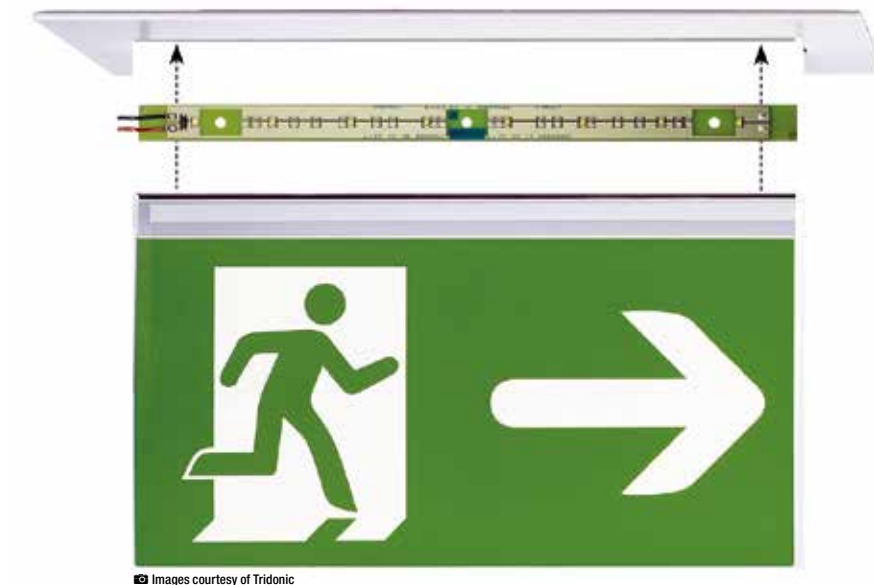
Modern LED emergency lighting solutions offer a number of clear benefits, namely:

- the units can be added in series or in parallel and can be run from one unit that can handle the loads required to illuminate the LEDs
- LEDs 'love' operating on a low voltage so are ideally suited to battery powered operation
- when you switch on an LED there is no delay or warm up time, maximum light output is instant.

Overall LEDs are more efficient, offer better light output per unit of battery, generate less heat and as a consequence the battery will last longer.

Testing, testing

Like any back up or contingency plan, you hope that you are never going to have to resort to your emergency lighting but should the need arise you want to be confident that it will work so regular testing is a must. Historically this has been done manually by a competent person physically testing each unit in a building individually and keeping robust and



Images courtesy of Tridonic

reliable records that could be referred to in case of a subsequent claim or enquiry. Not only was this time consuming, but it would often have to be undertaken out of hours, adding to the cost, and there was always the risk of human error either in the testing process or the recording procedures.

As technology has evolved more and more luminaires have been fitted with a self-test capability. Fitted in the emergency unit, this intelligent controller will carry out either a weekly or monthly check that puts the unit into emergency mode and measures the response. If all functions correctly the small LED shines green, if there is a fault it will flash red to indicate that a fault has been detected. However it still requires someone to check each unit regularly, record any failures and take the necessary remedial action. Whilst some regard this as 'fit and forget' if you forget too much this could become negligence.

The latest solutions utilise the industry wide DALI standard that removes the element of human error. A central control panel connects with the building wide DALI system and will instruct the units when to test the luminaires and will then compile all the results and provide a comprehensive report for the building or facilities manager who can then schedule the appropriate maintenance programme as and when required. A 'soft record' is kept on the controller and a hard copy can be printed off and kept in a fire safe



should in need to be referred to at any time in the future.

Looking to the future, this level of control is now moving to the cloud, where solutions like connecDIM offer an even greater level of control and monitoring, and the management of these systems can be done remotely. As more and more elements of a building's infrastructure become measurable and manageable then the emergency lighting will become integrated, the LEDs will provide a more efficient light source and emergency lighting, should it be required will deliver those three key elements of anti-panic, safe movement and exit to safety. But even with all that in place it still might be worth checking the battery in your torch and knowing where the candles and matches are kept!



For further information, go to
www.tridonic.com

**COME SEE US
AT THESE SHOWS**

NFPA BOOTH 438

**INTERSCHUTZ
HALL 13, STAND E06**



Quality, competitive pricing, and service. Made in America's heartland.
The valve that you've been looking for.

Lives and property depend on the system you design to work right, every time. But in today's competitive business environment, contractors and end users are faced with balancing value against quality, performance, and service. Located in America's heartland, we are dedicated to exceeding industry standards for quality, reliability, customer service, and engineering expertise. OCV Control Valves is ISO 9001 certified and has many valves that are UL listed and FM approved.



7400 East 42nd Place Tulsa, OK 74145 • P:918.627.1942 • 1.888.628.8258 • F:918.622.8916

www.controlvalves.com • sales@controlvalves.com



Fire Resistant Fixings

It is not often that a coroner's report makes specific recommendations on how a particular technical standard should be altered, so when this happens there is a very strong imperative on industry to react. The changes to the 17th edition of Wiring Regulations that were published in January 2015 and will come into effect on 1st July 2015 represent one such incident.



Jonathan Rawlinson

The revised regulations are also known as BS 7671: 2011+A3:2015 – Requirements for Electrical

Installations and now include a specific requirement for fire resistant cable fixings to be used in escape routes and critical areas within public buildings.

The need for such a revision was highlighted in a tragedy that occurred in April 2010 when two fire-fighters, called to attend a fire in a block of flats, died from sudden exposure to intense heat after becoming ensnared in electrical cabling. The coroner's report reviewed a series of possible actions that could address a number of contributory factors in this tragedy, but was unequivocal in his observations on the issue of cable fixing.

The recommendations reinforce the need for fire resistant fixings for fire detection and fire alarm systems (now covered by the new BS5839-1) but went further in highlighting the need to ensure that all cable used in escape

routes (BS 7671: 521.11.201) should be fixed in such a way that the cable does not cause a hazard.

The report highlighted serious failings in the electrical cable support system. It explained that as the trunking softened or melted in the heat it allowed the contained cable to fall free. "Surface mounted electrical cabling was encased in plastic trunking which failed when exposed to heat so releasing cables. These cables then became a hazard to fire-fighters."

The suggested resolution to this issue was spelled out in the coroner's recommendations:

"It is recommended that Building Regulations are amended to ensure that all cables, not just fire alarm cables, are supported by fire-resistant cable supports. This could be achieved by an amendment to BS 7671: 2008 Requirements for Electrical Installations."

This standard (otherwise known as the Wiring Regulations 17th Edition) is



Jonathan Rawlinson
is Technical Manager
at the Prysmian Group

Image courtesy of the Prysmian Group

regularly reviewed by a committee made up of representatives from both the Institute of Engineering and Technology and the British Standards Institute. Prysmian's view on the subject has always been to support the introduction of fire resistant fixings and the latest revision to the 17th edition – Amendment 3 – includes this change.

Amendment 3 provides a degree of enhanced fire risk protection which will see the phasing out of plastic cable clips, non-metallic cable ties or plastic trunking as the sole means of support for wiring systems. It now requires that all cable in risk areas must now be installed with a suitable fire-resistant means of support/retention.

A recent guidance document from the IET (Wiring Matters 54) has also added the recommendation that any Fire-resistant supports be fixed at regular intervals to a non-combustible substrate of the building.

Following the publication of the amendment on January 1st this year, industry has had a six month transition period to get up to speed with the changes and has been able to design, install and certify to either the new or previous standard. Any electrical installation designed after 1st July 2015 must comply with the updated regulations.

Prysmian cables fully supports the introduction of fire resistant fixings for all cables installed in escape routes and the company's own range of products includes fixings developed for use with specific cable types. The technical team has developed a range of fire-resistant fixings which are manufactured using non-combustible materials including stainless steel copper and cast iron.

Prysmian has worked in conjunction with ITW Construction Products, manufacturers of gas nailing technology, to produce the FP Firefix System. This enables gas-nailing technology to be used to install fire performance cable supports directly to a wide range of substrates including concrete, steel, composite steel decking, masonry and block-work.

As a general rule, fire resistant cables can also be fixed with copper, stainless steel or galvanised cast iron fixings, such as Prysmian's Bicon range. These are suitable for most electrical cable installations and will be the most appropriate fixings for cables in the public spaces included under the changes to the Wiring Regulations. Note: aluminium is not



Images courtesy of the Prysmian Group

recommended because of its relatively low melting point.

Prysmian has been ready for the change for some time and the Prysmian FP website has a series of guidance documents that include suitable fixing advice for fire performance cables. These same guides can be referenced for suitable fixings to meet the changes for non-fire resistant cables installed in escape routes in the Wiring Regulations. These documents including;

Guidance documents to these British standards are available for download from: http://www.fpcables.co.uk/supporting_documents.html.

 For more information, go to uk.prysmiangroup.com





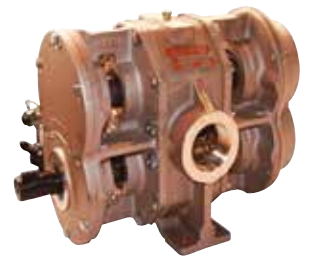
FROM INDIVIDUAL PUMPS TO TOTAL SYSTEMS, WE HAVE YOU COVERED.

JOIN US AT NFPA CHICAGO
BOOTH# 425



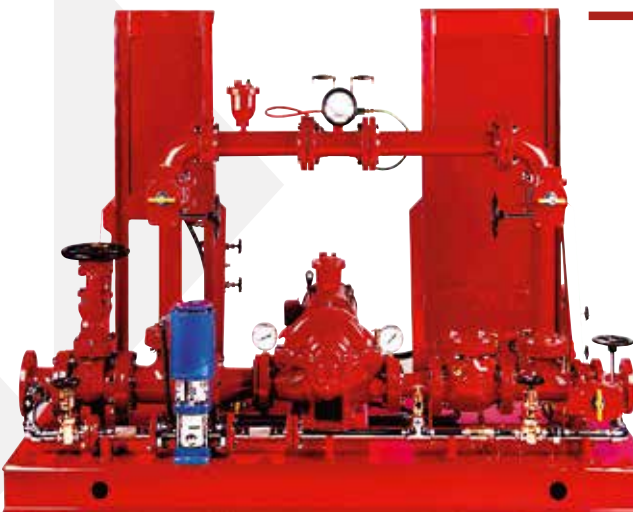
Pentair, a globally-recognized leader in fire pumps, has you covered with a full range of UL-Listed/FM-Approved fire pumps. Featuring Aurora and Fairbanks Nijhuis horizontal and vertical split case, end suction, vertical inline and vertical turbine pumps, Pentair provides pumps with the broad operating capabilities to address applications across the globe. Whether the installation is a new building, small space, or retrofit, Pentair fire pumps provide an efficient, cost-effective design solution.

The Aurora Edwards Series offers a rotary gear pump built specifically to address the demanding requirements of foam concentrate and water mist fire protection systems. Driven by electric motor, diesel engine, or water turbine (Pelton) drive, the Edwards pumps can address stationary or mobile applications. Pumps are available either as nonlisted pumps or UL-Listed/FM-Approved fire pump packages.



In addition to a full line of listed fire pump packages, Pentair also offers custom and pre-engineered fire pump systems.

These systems are factory assembled and tested, leaving only pipe connections, power connections and structural base grouting to be completed on site. All fire pump packages are built to NFPA 20 & NEC standards with UL Listed/FM Approved components.



Inspection and Maintenance of Fire Protection Systems

Building and fire codes require fire protection systems as part of the overall package of fire protection measures intended to provide a reasonable level of safety in building. In some cases, the codes may permit reductions in other requirements based upon the presence of one or more fire protection systems. For example, US codes typically allow decreased fire resistance ratings, increased travel distances, and the use of different interior finish materials when the building is protected with an automatic sprinkler system.



William E. Koffel
P.E., FSFPE

William E. Koffel is President of Koffel Associates, Inc. and Chairs the NFPA Technical Committee on Inspection, Testing and Maintenance of Water-based Fire Protection Systems.

Fire protection systems are also provided as a means of meeting other fire safety goals established by the owner such as: property protection, continuity of operations, and preservation of cultural resources. Fire protection systems may also be provided or the type of system is chosen to protect the environment. Insurance carriers may also require fire protection systems to reduce their risk of loss should an unwanted fire occur.

Therefore, it is critical that such systems be properly designed, installed, and maintained. Codes and standards require that owners properly inspect, test, and maintain any fire protection system. Standards, such as NFPA 25 and NFPA 72, have been developed to identify the activities and frequencies that such activities are to be performed. Building owners and contractors typically use these standards as the basis of their preventive maintenance programs. The purpose of this article is to focus on current issues associated with the preventive maintenance, commonly referred to as inspection, testing, and maintenance (ITM), of fire protection systems.

Documentation

The primary intent of proper documentation of one's ITM program is to provide a means by which a regulator can verify that the systems are being maintained as required by codes and standards. However, it should also be recognized that the documentation is one of the first things that an investigator will request after

an incident. Documentation will typically help one side of any litigation that might occur after the incident. Here are some examples:

- A contractor failed to document that a hydrostatic test was performed on an automatic sprinkler system which leaked and resulted in a substantial loss of property in a hospital. Any argument that the system was properly installed was weakened by the lack of proper documentation.
- A contractor did not document the specific activities performed while testing a fire alarm system. Later that same day a fire occurred and plaintiffs alleged that the detection system failed to properly detect the fire. The plaintiff further alleged that problems with the detection system should have been identified earlier in the day by the contractor, a claim that was difficult to refute without proper documentation.

There are many instances in which the contractor providing the ITM service properly documents the activities performed and the owner fails to fulfill their responsibilities. Too often the documentation identifies problems that need to be addressed but the owner fails to follow-through to correct the deficiencies. A concern expressed by several ITM contractors who serve on the NFPA Technical Committee responsible for NFPA 25 is the frequency in which the same deficiency is repeatedly found and

documented. A procedure should be in place by which the owner properly notes the deficiencies found and implements the appropriate remediation actions.

One way to facilitate this is to customize the ITM documents for a particular facility. Recognizing the benefit of this practice, recently we have had several clients request that we develop customized forms for their use. For example, even the simple task of periodically recording system pressures can be enhanced when the form used includes a range of pressures that one might expect to find. When a pressure is observed outside the “normal range”, it becomes very apparent that some action is required to at least investigate the situation.

Assigning Responsibility

Codes and standards that regulate ITM allow the owner to delegate the performance of the activities to a contractor. The contract between the owner and the contractor are critical in making sure that all appropriate activities are being performed and ultimately may determine fault or responsibility if an activity is not performed properly. Without such documentation, certain critical activities may not be performed. Some examples of problems are:

- The adequacy of the system is not evaluated. For example, a contract may require that an annual flow test of a fire pump be performed. The contractor performs the test and provides the owner with the data collected. In this scenario, who is responsible to compare the data to previous test data and to the water supply to ensure that the fire pump performance is adequate? Remembering that the codes and standards assign the ultimate responsibility to the owner, failure to properly document the responsibility results in the owner being responsible.
- A building management company prepared a contract that specifically identified the party responsible to perform specific tasks required by NFPA 25. Unfortunately, the building management company retained the responsibility to perform periodic inspections and tests of the system control valves, including a specific reference to the underground gate valve. When a water leak occurred in the supply pipe to the system riser, the

underground gate valve was found to be defective and unable to be closed. The delay in shutting off the water supply to the system resulted in additional water damage. Even though that valve is typically outside the scope of NFPA 25, the building management company was held partially responsible for the additional water damage based upon the contract language.

Evaluating the test data may not be a simple task and should be performed by qualified individuals. An example of where this was not done properly involved a fire in a retail store that was protected with an automatic sprinkler system. Due to an underground gate valve being essentially closed, the sprinkler system failed to control the fire. During the investigation it was determined that the installing contractor misrepresented the data points for the main drain test that was allegedly performed during the acceptance testing of the system. A third party engineering firm certified that the test results and that the test was performed as required by NFPA 13. However, the pressures recorded on the form were essentially impossible to obtain at that particular site. A proper main drain test, with correct pressures recorded, would have identified that the underground gate valve was essentially closed. Unfortunately this mistake was compounded by several contractors subsequently failing to perform a main drain test on a periodic basis.

Are Existing Standards Minimum Requirements?

One of the concerns expressed with the existing standards is that the activities to be performed have expanded to a point where they exceed what some consider to be a minimum standard. This may be compounded by the fact that most standards apply to all installations of such systems, regardless of the hazard of the occupancy. As the use of fire protection systems have expanded beyond high risk occupancies, should there be different levels of ITM requirements based upon the level of risk being protected?

One way in which some standards currently address these differences are by allowing a performance based option to determine the activities and frequencies at which such activities should be performed. Unfortunately, the lack of

adequate data restricts the use of an ITM program based upon a risk analysis. In some cases the data may exist but it is not collected in a manner in which it can be used by those wishing to perform a risk analysis. Performance based options also require approval by the regulatory authorities which can provide an additional barrier to using the option, especially with insufficient data. For many building owners, it becomes easier to simply accept the prescriptive solution.

Oversight

In the past, insurance carriers would typically perform detailed audits of the protected properties. Fire officials had adequate resources to evaluate whether the fire protection systems in a building have been properly maintained. However, many insurance carriers and fire officials are reporting reduced resources and therefore the inability to provide the oversight that has been provided in the past. Without such oversight, it becomes more critical that owners make the effort to ensure that their systems are being properly maintained. It should also be noted that despite the reduced oversight provided by insurance carriers, some insurance policies contain a clause that reduces or eliminates their financial responsibility if the systems are not properly maintained.

Summary

In order for fire protection systems to be reliable, it is critical that owners assume the responsibility for proper inspection, testing, and maintenance of their fire protection systems. Where the responsibility is shared or delegated, it is important that the division of responsibilities be properly defined. Those that are performing ITM services, whether a contractor or in-house personnel, need to make sure that the activities are properly performed and documented. When deficiencies are identified, the responsible party needs to make sure that they are corrected in a timely manner. Lastly, all of us involved should strive to provide the data necessary so that our standards can be technically based and that alternative programs can be implemented, where appropriate.



For further information, go to
www.koffel.com

The ultimate smoke detector.



The ultimate...

- Detection — very early warning with increased sample hole coverage and reduced nuisance alarms
- Future-proof platform, with expandable hardware modules for additional capabilities & downloadable software analytics for more effective response
- Connectivity with WiFi, Ethernet, USB, iVESDA mobile apps & more
- Backward compatibility, both physically and electronically
- Protection of your investment, with increased longevity and lower total-cost of ownership



Stay protected and connected
with the iVESDA mobile application
for iOS and Android devices

VESDA® 
xtralis™

**You've never seen
anything better.
You never will.**

Learn more: www.xtralis.com/ultimate



FREE Subscription

To subscribe to IFP Magazine and for unlimited access to our digital resources, please register at

www.ifpmag.com

Come and visit us at



Visit us at
Hall 24, Stand D22
8th-13th June 2015
Hannover, Germany



Visit us at
Stand 1451
22nd-24th June 2015
Chicago, USA

www.mdmpublishing.com

ADVERTISERS' INDEX

Advanced Electronics	2
Amerex Corporation	75
Apollo Fire Detectors	97
BIOex	87
BRE Global Fire / LPCB	39
C-TEC	47
Central Ventilation Systems Co LLC	98
Coopers Fire Ltd	51
D-Line (Europe) Limited	19
Dafo Fomtec	IBC
Dr Sthamer	25
DSPA b.v.	101
DuPont Performance Chemicals	OBC
Dynax Corporation	56
E2S	27
Ertecna – Everlux	110
Eusebi Impianti	84
FFE	65 and 93
Fireblitz Extinguisher Ltd	17
Firemiks	12
Firetrace International	4
Fogtec GmbH	92
Gielle	105
HD FireProtect	89
IWMA	86
Janus Fire Systems	19
MICC Ltd	47
Moflash Signalling Limited	39
MSA	83
NewAge Industries	31
Nexans	7
Nittan Europe Ltd	37
OCV Control Valves	113
Patterson Pump Company	20
Pentair Pumps	116
Protectowire Company Inc	64
Reliable Fire Sprinkler (UK) Ltd	71
Rotarex S.A.	35
Solberg	29
Specified Technologies Inc	60-61
SPP Pumps Limited	109
STI Europe Ltd	79
TLX Technologies	27
Tornatech Inc	77
Tyco Fire Protection Products	IFC
Underwriters Laboratories	41
Unifrax Corporation	52
Vanzetti Equipment Srl	51
Victaulic	69
Vimpex	89
Wagner GmbH	15
Xtralis	119



“The independent alternative”

Foam Concentrates and Foam Systems

Visit us at Interschutz, Hall 013/Booth F20



fomtec
Fire Fighting Foams & Equipment



Dafo Fomtec AB P.O Box 683 SE-135 26 Tyresö Sweden
Phone: +46 8 506 405 66 Fax: +46 8 506 405 29
E-mail: info@fomtec.com Web: www.fomtec.com

When asset protection matters most. DuPont™ FM-200®.

DuPont™ FM-200® clean agent can reach extinguishing levels in 10 seconds or less, stopping ordinary combustible, electrical, and flammable liquid fires before they cause significant damage. When fire is extinguished that quickly, it means less damage, lower repair costs, and an extra margin of safety for employees and valuable assets—making it easier to keep your business running smoothly.

Make sure your business is protected with the most widely specified clean agent in the world. Get maximum protection with DuPont™ FM-200®.

1.800.473.7790
cleanagents.dupont.com



DuPont Fire Extinguishants. The Science of Protection.™



The miracles of science™

Copyright © 2013 DuPont. The DuPont Oval Logo, DuPont™, The miracles of science™, The Science of Protection™, and FM-200® are trademarks or registered trademarks of E.I. du Pont de Nemours and Company or its affiliates. All rights reserved.

IFP

INTERNATIONAL FIRE PROTECTION MAGAZINE

THE GLOBAL VOICE FOR PASSIVE AND ACTIVE FIRE PROTECTION



MDM
PUBLISHING LTD
WORLDWIDE MEDIA

www.ifpmag.com

Issue 63 • September 2015

Reasons to choose SAPPHIRE...



...#2 where safety is a top priority



SAPPHIRE systems are ideal for use in occupied areas. SAPPHIRE uses 3M™ Novec™ 1230 Fire Protection Fluid which is very low in acute and chronic toxicity. When compared to other fire suppression agents, Novec 1230 offers the greatest margin of safety for regular Class A hazards between the design concentration of the agent (4.5% - 5.3%) and the No Observable Adverse Effect Level (10%).

With its international standards and meeting the requirements of approval agencies globally this is why SAPPHIRE 25 / 42 bar systems are ideal for use in occupied areas.

To find out how HYGOOD fire suppression products can help protect your business visit www.tfpemea.com

Or contact your local sales representative, call: 0161 2594 000



SEPTEMBER 2015 • ISSUE 63

Cover image: Air Distribution System (ADS) ducts wrapped with Unifrax's FyreWrap Elite 1.5 Duct Insulation. Image courtesy of Unifrax.

Publishers

David Staddon
Mark Seton

Contributing Editors

Ross Barritt, Wayne Breighner, Wilf Butcher, Raman Chagger, Bob Glendenning, Mike Kerrison, Dr. Fariz Khellaf, Vincent Lagarrigue, John Newton, Jim Pauley, Steve Rieszko, Mark L. Robin, Craig H. Shelley, Graham Simons, Sue Tarantino, Valerio Del Vecchio, Duncan J. White.

Senior Design Manager

Richard Parsons
richard.parsons@mdmpublishing.com

Web and IT Manager

Neil Spinney
neil.spinney@mdmpublishing.com

IFP is published quarterly by:

MDM Publishing Ltd
The Abbey Manor Business Centre,
The Abbey, Preston Road,
Yeovil, Somerset. BA20 2EN. UK
Tel: +44 (0) 1935 426 428
Fax: +44 (0) 1935 426 926
Email: dave.staddon@mdmpublishing.com
Website: www.mdmpublishing.com

©All rights reserved

Annual subscription free of charge.
Register at www.mdmpublishing.com

ISSN – 1468-3873

DISCLAIMER: The views and opinions expressed in INTERNATIONAL FIRE PROTECTION are not necessarily those of MDM Publishing Ltd. The magazine and publishers are in no way responsible or legally liable for any errors or anomalies made within the editorial by our authors. All articles are protected by copyright and written permission must be sought from the publishers for reprinting or any form of duplication of any of the magazines content. Any queries should be addressed in writing to the publishers.

Reprints of articles are available on request.
Prices on application to the Publishers.

Designed, Edited and Printed in the UK.

FREE Subscription

To subscribe to IFP Magazine and for unlimited access to our digital resources, please register at www.ifpmag.com

PROUD TO SUPPORT



Contents

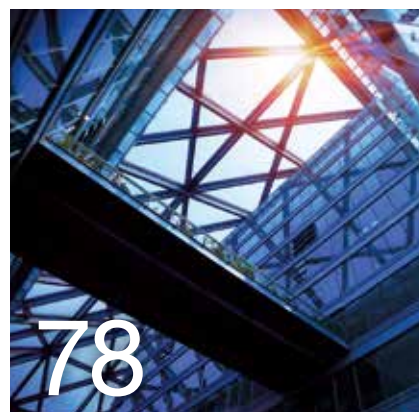
SEPTEMBER 2015

REGULARS

- 3 IFP Comment
- 5 NFPA Vision
- 6 News and Profiles

FEATURES

- 28 Should the Fire Industry Compromise on Touchscreen Technology?
- 31 Designing for Fire Safety – Turning Aspiration into Reality
- 36 Petroleum Storage Tank Facilities – Part 1
- 41 Designing for Fire Safety – New Wiring Regulations
- 46 Enabling safe and reliable offshore LNG transfer operations
- 51 Fire Wrap Systems as Alternative to Fire Rated Shaft Construction
- 57 Fire Protection in Britain's Heritage Buildings
- 63 Voice Alarms add Reliability and Flexibility to Emergency Warnings
- 68 Why Performance Testing of Windows is so Critical Today
- 70 Cirrus Hybrid Aspirating Fire and Smoke Detectors
- 74 The Effectiveness of LED Devices in Warning of Fire
- 78 Steel Structures in Modern Building Design Present a Puzzle
- 80 Environmental Regulations and the HFC-Based Clean Fire Extinguishing Agents
- 85 Smoke Shafts – The Solution for Smoke Control in High Rise Buildings
- 88 Advertisers' Index



facebook

LinkedIn

twitter

Google+

ARE YOU STILL WEIGHING CYLINDERS?

Portalevel® MAX uses ultrasonic technology to identify the liquid levels of CO2, FM-200™, NOVEC™ 1230 & Halon Cylinders



PORTALEVEL™ MAX

- Incredibly simple to use & accurate to +/- 0.125 inch
- Safer than weighing - no need to remove cylinders from brackets so reduced risk of accident or back injury during servicing
- Faster than weighing – cylinder tested in under 30 seconds
- Reduced risk of cylinder leakage when disconnecting/reconnecting
- UL Approved & complies with all relevant NFPA Codes
- Portasteele™ Calculator to convert liquid level into agent weight readings

COLTRACO
Ultrasonics | since 1987

011 44 207 629 8475 | sales@coltraco.co.uk | www.coltraco.com

Raising Standards, Saving Lives

What can be more important than the safety of people as they move about their business in our large cities? In modern buildings made of complex steel structures, the methods and best practices in applying protective coatings are crucial. The supply chain serving these buildings has become increasingly complicated as the responsibility for fire engineering safety passes from the architect to the installing contractor.



Bob Glendenning

Manager, Fire Engineering and Estimation, Sherwin-Williams Protective and Marine Coatings.

What can be more important than the safety of people as they move about their business in our large cities?

In modern buildings made of complex steel structures, the methods and best practices in applying protective coatings are crucial. The supply chain serving these buildings has become increasingly complicated as the responsibility for fire engineering safety passes from the architect to the installing contractor.

At Sherwin-Williams, we are seeing an alarming number and type of professionals cutting corners at various stages, some dangerously working to assumed load calculations on new materials and designs. For the fire protection design some of this is simply unsafe design due to ignorance, but there is unsafe design due to bad practice such as assuming utilisation and web stability of cellular beams.

And then there is unsafe design by design. The most dangerous is where the complex design explicitly excludes adherence to the existing guidance because of time, cost or due to the design being purely ambient.

At a recent Roundtable event of experts in the fire engineering industry, a leading architect representing RIBA highlighted how, from an architect's standpoint, you would not know what level of protection is relevant unless a building is purpose-built. It is a matter of risk, he added, and most buildings don't catch fire.

There is clearly a disconnect between the building designers and the contractors, and fire engineering protection is now so difficult that even architects are struggling to find their way through guidance. Indeed, there is an increasing blurring of the lines of precisely where the responsibility for fire safety lies through the process of concept, design and installation. It can change project by project but should in practice lie with the designer along with other specification details, whether they are amended through the development stages or not.

Ultimately, the responsibility under legislation lies with the 'Responsible Person' as described in the Regulatory Reform (Fire Safety) Order 2005, which for the purposes of the law is referred to as 'the employer and/or the building owners or occupiers.' They are duty-bound to carry out a fire safety risk assessment and keep it up to date. This shares the same approach as health and safety risk assessments and can be carried out either as part of an overall risk assessment or as a separate exercise.

Based on the findings of the

assessment, employers need to ensure that adequate and appropriate fire safety measures are in place to minimise the risk of injury or loss of life in the event of a fire. Once they have identified the risks, they can take appropriate action to control them, remove the risk altogether or reduce the risk and manage them. They should also consider how they will protect people if there is a fire.

How is the Responsible Person to understand and act to cover these issues? The only way very often is to employ fire safety experts, which in turn comes with a cost. A worrying trend is emerging where the complexity of fire safe design means it can be out of the sphere of knowledge of the Responsible Person, the steel frame designers and indeed, where employed, the fire consultant, particularly if employed to consider non-structural aspects of fire safety.

As a professional group, those who met in the Steel Structures Roundtable Group agreed that steps should be taken to raise awareness of the issues at relevant levels of design and installation, from architects through to estimators including building control officers.

Other actions were to look at the model adopted in Ireland which has tightened Building Control sign-off, and to consider a third party scheme to regulate the fire protection design process. And what can be done to act as a deterrent for those flouting guidance and best practice?

We believe there can be no more important issue than to make this area of responsibility clear for all concerned, especially those members of the public who use these modern buildings as part of their daily lives.

I'm IN!

Are *you* IN?

INtroducing...NFPA Xchange™!

INformation. INtelligence. Get INvolved.

Go to **nfpa.org/Xchange** to join now!

Enter your NFPA ID# or email address and password

That's it—you're IN!



nfpa.org/Xchange

New Vision, New Mission But the Goal Remains the Same: Saving Lives and Reducing Loss

As many of you are aware, we just finished our Conference and Expo in Chicago. The event was a great success; the general session, featured presentation and educational sessions received great reviews from attendees from all over the globe, and there were many new products and services shown at the Expo. I continue to hear from attendees that this is one of the best educational and networking events in the world of fire and electrical safety.



Jim Pauley

President and CEO of the NFPA

It was also an exciting time for me because I was able to share my vision of the NFPA of the future. We know that, as an organization, we have to transform as you, our stakeholders, adapt to an ever-changing environment of fire and life safety.

Today, we realize that we are largely seen as a standards development organization. However, to fully meet the needs of our stakeholders, we must transform ourselves into an information and knowledge organization. I want to be very clear that codes and standards have been and will continue to be a vital and important part of what we do, but they are just one facet of the information and knowledge that is important to our stakeholders. Our challenge is to add value and deliver additional information and knowledge that helps you do your job every day.

As we embarked on this transformation, we identified six key areas of focus and change for NFPA: to be more stakeholder-centric; to have a greater digital focus in the information we produce; to become more global; to produce focused education and advocacy programs; to engage in partnerships that move us closer to our vision; and to fully exploit all sources of data. Each of these contributes to our recognition as an information and knowledge organization versus being seen just as a standards developing organization.

Through this effort, we have arrived at a new vision and mission for NFPA. Our new vision: *"We are the leading global advocate for the elimination of death, injury, property and economic loss due to fire, electrical and related hazards."* As a global advocate, we want to be known around the world as leading the effort to reduce and eliminate loss—a world where no one dies or is injured by fire. Our scope includes economic loss, a key feature in areas like resiliency and business continuity. And we have made it clear that this vision includes protection from electrical hazards.

Our new mission also reflects this

broader embrace of information and knowledge: *"We help save lives and reduce loss with information, knowledge and passion."* When we do our job right around information and knowledge, we help all of you save lives through what you do.

In our efforts to become more global, we have much to offer and much to gain. We have a lot of information and knowledge that can be shared with developed and developing countries. But we also recognize that our information and knowledge can be enhanced with data and information gathered from those working to save lives and reduce loss in these countries. This is an area in which we all can do better. In addition, our mission can be furthered with a greater exchange of information, particularly research and data to support enforcement. We have long recognized that safety is improved through the use, adoption and enforcement of the latest codes and standards.

I invite you to support this new vision and mission and I look forward to working with all of our members to make the world a safer place.

 **For more information, go to www.nfpa.org**



To fully meet the needs of our stakeholders, NFPA must transform itself into an information and knowledge organization.

One-stop Protection for Historic Building

Situated in Norway's Bergen municipality, Laksevåg Kirke is a small wooden church built in 1875. A fire protection system was needed not only for inside the church but, importantly, also for the façade of the building which stands just 8 – 10 metres away from other wooden buildings, including a Unesco heritage building dating back to the 1770s.

A major challenge was the very small size of the mechanical room which had to house the five alarm valves. They needed to fit into a space measuring just 2.8m long by 1.4m wide and 1.9m high. Having reviewed a range of available alarm valves, contractors Anders & Grevstad selected the Victaulic FireLock NXT Series 769 preaction double interlock electric pneumatic valve to protect the interior of the church. The most compact such device on the market, it solved the problem of lack of space and, being quick and easy to install, maintain and operate, offered

considerable time- and cost-saving benefits. Because it is supplied pre-assembled, pre-trimmed and with pre-set pressure switches, installers were able to install the valve directly onto the pipework, without having to build up the trim – a great advantage when working in a confined space.

To protect the building's wooden exterior, a wet device and three deluge devices from the same series were chosen, so those working on the project benefitted from the commonality. "We have different systems but the body design is the same for wet, preaction and deluge alarm valves which means we have consistency. The same installers can work on all the devices so there's no need to train specialist teams. It's a very good system," said Anders & Grevstad project leader, Rolf Fanebust. A further advantage is that those servicing and maintaining the devices will be able to deal with the full range and only need to carry a small number of common parts.

In a one-stop-shop approach, Victaulic butterfly valves and installation-ready rigid couplings – both designed specifically for fire protection systems – were used on the project. This helped save time, increase productivity and maximise efficiency on the installation.



**For more information, go to
www.victaulic.com**



MED Approval for Esento Control Panels

Haes has launched their latest product range, the Esento Marine conventional control panels. By listening to its customers and strategic partners, Haes saw the need for a range of quality, functional and affordable conventional marine control panels. The panels have been approved, by the BRE, to the latest Marine Equipment Directive (MED).

Haes' Sales Manager, John Craig, said,

"The new approved marine panels allow Haes to target different customers and markets, both at home and abroad."

Building on over 40 years of manufacturing heritage, the MED approved panels illustrate Haes' commitment to continued investment in R&D and third party approvals, to enhance and extend its product offering.

The panels have been designed to

minimise labour costs by providing ample space for tasks such as wiring and changing batteries. Simple colour-coded buttons gives the end user the confidence to correctly manage their fire alarm system. A host of configuration and programming options are provided, including: programmable inputs and outputs, false alarm management, muster alarm and programmable output delays.

The full range of features available in the range of Esento Marine panels are:

- 2-12 zone as standard
- Link up to 8 panels to create 96 zones
- Muster alarm
- False alarm management
- Two enclosure sizes
- Repeater options

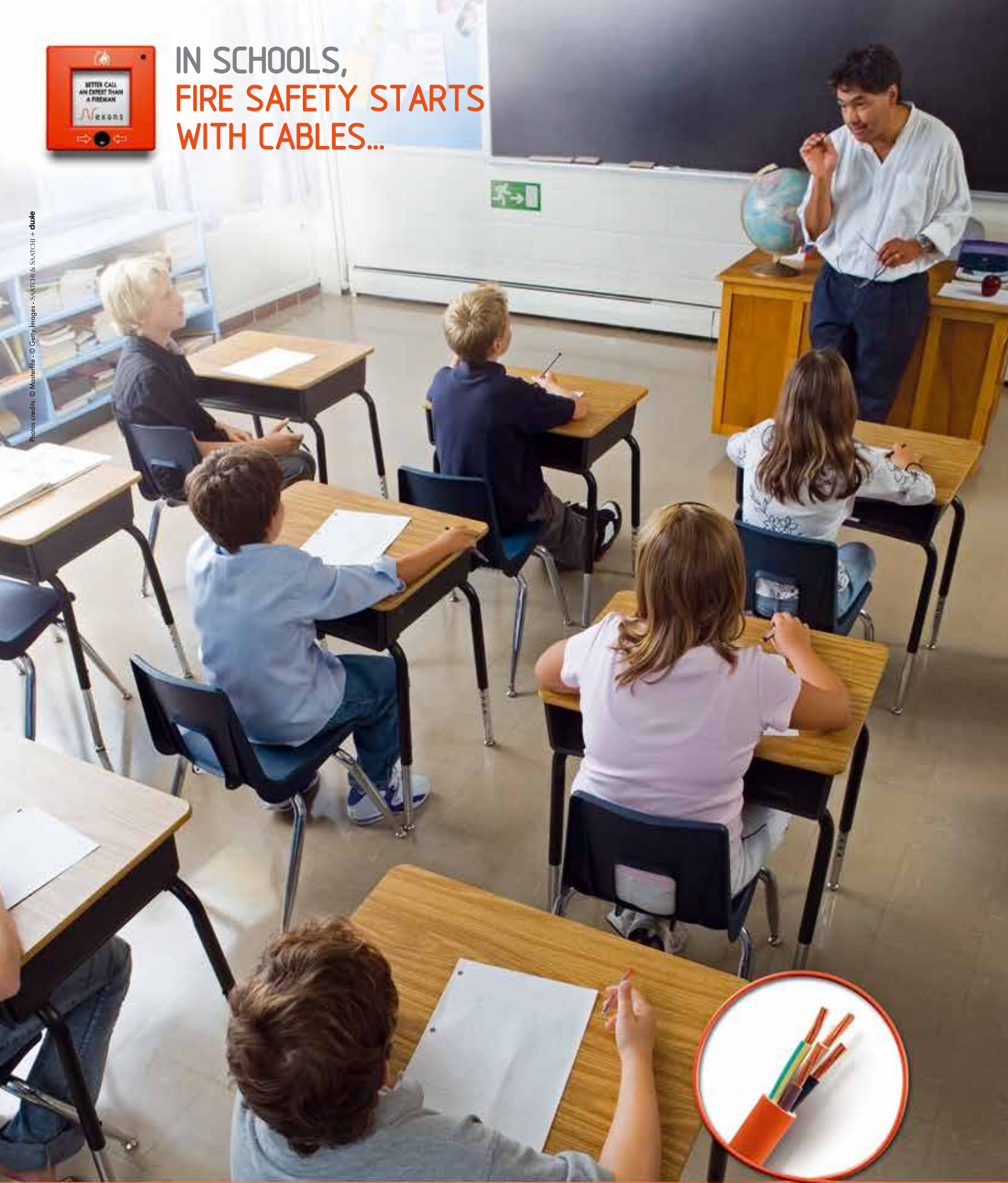


**For more information, email
enquiries@haes-systems.co.uk**





IN SCHOOLS, FIRE SAFETY STARTS WITH CABLES...



Photos credits: © Masterfile - © Getty Images - SHUTTER & SHUTTER - duple

NEXANS IS COMMITTED TO IMPROVING SAFETY IN BUILDINGS

When the protection of human life and sensitive electronic equipment is paramount, choosing the right materials is essential. As well as assuring the integrity of fire safety systems, installing Nexans' Alsecure range of cables limits the effects of toxic fumes and smoke, thus aiding the facilitation of effective escape for people from a fire situation and reducing collateral damage to expensive equipment.

www.nexans.com

 **nexans**

Your expert in Fire Safety Cables

The ROCKWOOL UK Story

Leading Manufacturers of Stone Wool Insulation for Fire Protection

ROCKWOOL® is one of the world's leading manufacturers of stone wool insulation and one of the UK's most respected brands of insulation for fire protection and firestopping applications.

The company makes and supplies a full range of smart and sustainable insulation products for the construction industry based on innovative stone wool technology. Understanding the highly impressive product range, invariably begins with a history lesson.

It sounds improbable but the raw ingredient for the product is a 200 million year old rock. Basalt is actually a base rock from when the Northern Hemisphere was first laid down.

Around the Pacific Rim and Hawaii in particular, volcanic activity produces violent eruptions of dust pumice and strands of a material which the locals refer to as Queen Peles hair. It is formed as the molten lava falls through a cold air draft. These strands are nature's version of what we now recognise today as stone wool.

▼ **State-of-the-art**
production facilities.

It was around 1900 that scientists started to look more closely at the material as a potential insulant for a range of applications. The clever part was in creating their own mini volcano in factory conditions, to produce the wool in commercially viable quantities.

By the late 1930's stone wool factories were established in Denmark, Sweden and Norway. Their success in countries where the need for efficient insulation is paramount was rapid and by the 1970's they were looking to expand in Europe. Today, the UK manufacturing plant, near Bridgend, in South Wales produces stone wool on a state of the art line and packaging facility.

The Bridgend plant started in September 1979 and with subsequent additions to the lines and major investment in the whole manufacturing and storage processes, it is now one of the most efficient production facilities of its type in the world.

Firstly, the base rock is graded and crushed along with other carefully selected ingredients, such as, recycled stone wool to form a raw material. This charge, as it is known, is then melted in a cupola furnace at a temperature in excess of 1500.C.

As the liquid rock pours from the furnace, nature's process is recreated. Lava flow is directed into a chamber where it is spun and transformed into rock strands and stone wool.

The spun strands are then mixed with a binder. Trillions of these strands are collected to form a matt which is then cured. Cut to various lengths and thicknesses it is then prepared and packaged to form an extensive range of products for a wide variety of applications.

From their Bridgend base and office in Hammersmith, ROCKWOOL has customer support, sales and technical teams serving the whole of the UK and Ireland. Standing by its core values of service and specialist knowledgeable staff, the company provides great service and value to all its customers, with effective and efficient delivery to an extensive distribution network.

Building a sustainable future and the commitment to improve the environment is at the heart of the business. ROCKWOOL is a Green Compass Scheme accredited member, following a successful and rigorous environmental audit against PAS402:2013.

The Green Compass Scheme, developed by Constructing Excellence in Wales, in conjunction with UKAS accredited inspection bodies, provides independent verification of the performance data reported by waste management organisations.

The accreditation marks a validation of ROCKWOOL efforts to improve business efficiency, achieve a sustainable future and meet its corporate social responsibility goals. PAS 402:2013 requires a waste resource management organisation to report how it conducts its waste management activities and the landfill diversion and materials recovery rates it achieves. ROCKWOOL is subject to a stringent evaluation, assessing its environmental, quality and health and safety performance, practices, procedures and policies as part of this assessment.



Image courtesy of ROCKWOOL Ltd.

ROCKWOOL, fire stopping and fire protection

ROCKWOOL in the UK provides a wide range of insulation products for both fire stopping and fire protection applications.

As ROCKWOOL stone wool tolerates temperatures of up to 1000°C and has been awarded the highest possible European classification: A1 non-combustible, it provides vital fire protection in buildings, keeping people safe, as well as minimising damage to valuable assets.

ROCKWOOL Fire Protection products, in the event of a fire, are designed to remain stable and slow the spread of flames. The products are fire-safe and help to protect the building's load-bearing structure, buying valuable time for occupants to safely escape, thereby protecting lives and investment.

These products can be used as an effective fire barrier in a range of building applications, such as, a fire shield for structural steel members, cavity barriers for concealed spaces, and a fireproof cover for pipes and ducts. To ensure compliance, ROCKWOOL Fire Stopping and Fire Protection products and systems must be installed in accordance to the manufacturer's installation guidelines.

To stop fire spreading, UK Building Regulations insist on effective compartmentalisation, where fire, smoke and gasses must be kept for as long as possible where they have originated. ROCKWOOL Fire stopping solutions ensure that the fire resistance of protected walls, floors and roofs isn't compromised by services or voids. Their products ensure that cables, pipes, trunking, or ductwork, or the voids that they pass through, don't provide the weak link through which fire can spread.

A favourite within this product range would be the company's Ablative Coated Batt, available in 50mm and 60mm thicknesses. These batts are designed to act as an airseal barrier to re-instate the fire resistance and acoustic performances of concrete floors, masonry walls and dry wall systems when voids have been created for the passage of services. It can be used with all types of services including pipes made of steel, cast iron, copper, polypropylene (PP), high density polythene (HDPE), PVC and ABS; along with all sheathed cables up to 80mm and supported cable bundles up to 100mm.

ROCKWOOL in the UK is also well



Image courtesy of ROCKWOOL Ltd.

known for its comprehensive range of complimentary fire stopping products for use in conjunction with FIREPRO® Ablative Coated Batt, such as Intumescent Pipe Collars, Wraps, Sealants, Coatings, Pillows and Compounds.

FIREPRO® Softseal at Firex

As a part of its FIREPRO® range of fire protection products, ROCKWOOL recently unveiled the new SoftSeal system at Firex. SoftSeal is a flexible, firestopping solution particularly suited to service penetrations and linear joints, where high levels of movement need to be accommodated.

This CE marked solution is proven to accommodate movement of +/- 25%, SoftSeal can be used for both vertical and horizontal applications. SoftSeal comprises a 80Kg/m³ density stone wool strip pre-coated with a specially formulated SoftSeal Flexible Coating, which is also available in 5l tubs for making good on site and coating of the adjacent substrate. Comprehensively tested the system offers two types of coated strips, firstly the SoftSeal Linear Joint Seal which is used for linear movement joints and can also be used as a 'head-of-wall' barrier to extend the fire resistance and acoustic performances of masonry walls that finish at suspended ceiling height. Secondly the SoftSeal Coated Strip is used to reinstate the fire resistance and acoustic performance where voids have been created for the passage of services.

The SoftSeal system includes ancillary products to complement the SoftSeal Coated Strips, including SoftSeal Flexible

▲ **FIREPRO® SoftSeal accommodates movement in services.**

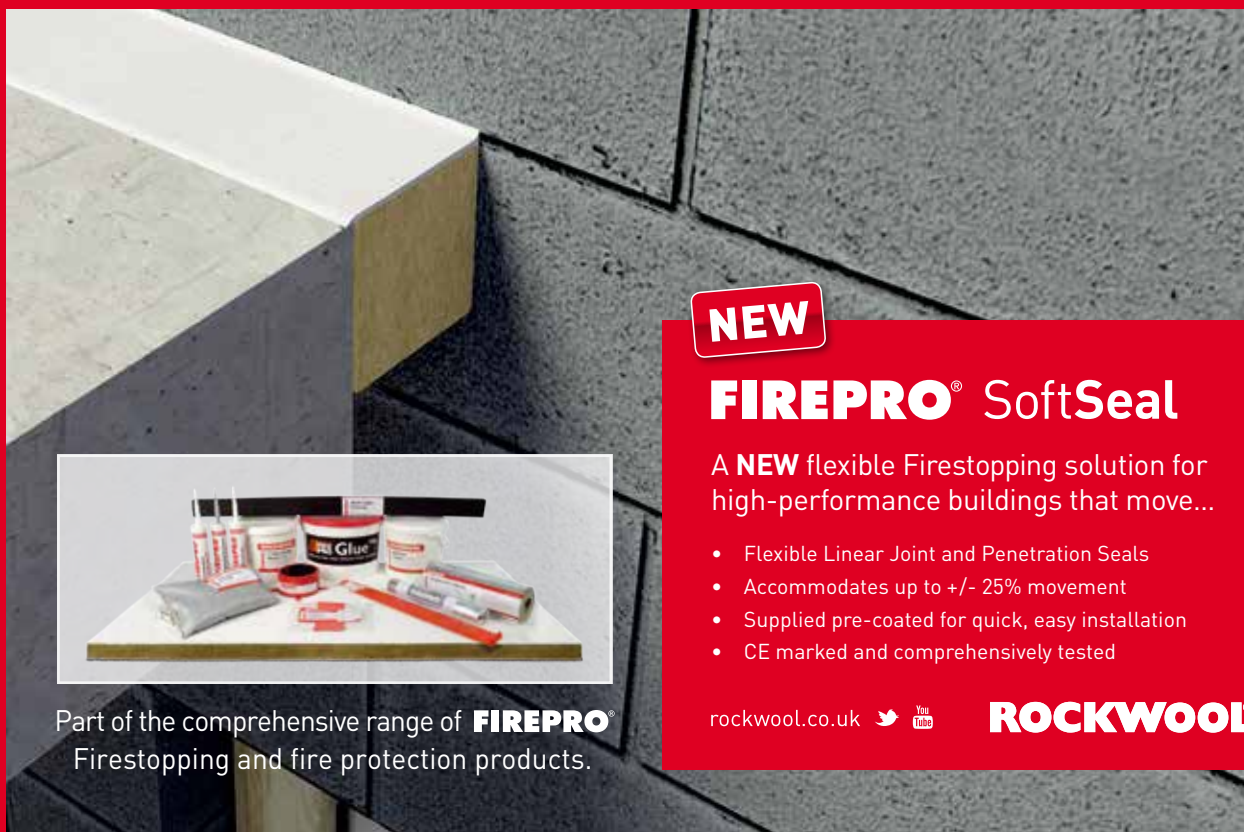
Acoustic Intumescent Sealant and SoftSeal High Expansion Intumescent Sealant.

All SoftSeal Strips are supplied measuring 1200mm x 200mm x 100mm. SoftSeal Linear Joint Seal has been tested to the dedicated fire resistance standard BS EN 1366-3 with the SoftSeal Coated Strips being tested to BS EN1366-4, both are and classified to EN 13501-2. The ROCKWOOL FIREPRO® SoftSeal System can be installed into service penetrations as a stand-alone seal for openings up to 1000mm x 1000mm, or, alternatively, as part of a larger Ablative Coated Batt seal of 2 layers to accommodate movement of services. As a Linear Joint Seal, SoftSeal is suitable for linear joint widths of up to 300mm.

"The ROCKWOOL story in the UK is rooted in innovation, sustainability and a focus on developing insulation products that are fit for purpose," says Warren Dudding, Marketing Director, ROCKWOOL Ltd, UK. "Our specialist range of firestopping products help architects, contractors and developers conform to current fire regulations. Fire stopping and penetration sealing ensures that walls, floors and roofs retain their fire resistance, even where voids exist or services have been installed."



**For more information, email
www.rockwool.co.uk**





NEW

FIREPRO® SoftSeal

A **NEW** flexible Firestopping solution for high-performance buildings that move...

- Flexible Linear Joint and Penetration Seals
- Accommodates up to +/- 25% movement
- Supplied pre-coated for quick, easy installation
- CE marked and comprehensively tested

Part of the comprehensive range of **FIREPRO®** Firestopping and fire protection products.

rockwool.co.uk   **ROCKWOOL®**

CREATE AND PROTECT®

GLOBAL SOLUTIONS FOR CLEAN AGENT AND INERT GAS WORKSHOP



UNITS FOR HANDLING, FILLING, RECOVERING CLEAN AGENTS AND INERT GASES

info@vanzettiequipment.com | www.vanzettiequipment.com

vanzetti
equipment
GLOBAL SOLUTIONS FOR CYLINDERS

Strebord Fire Door Still Fit for Purpose a Million Openings Later!

Falcon Panel Products has recently added to the wealth of certification it holds for its Strebord product range by achieving certification under the BM TRADA Q-Mark 'Enhanced Lifetime Performance of Doors' certification scheme.

As part of the certification process, the Strebord product was subjected to a one million cycle test successfully achieving a class 8 performance under the standard. This achievement once again demonstrates the durability of Strebord.



Key ironmongery elements used for the cycle test included a Winkhaus AV2 lock. This piece of hardware which is capable of meeting the requirements of 'Secured by Design' excelled when put to the test, clearly demonstrating its life cycle performance within a Strebord door core. The test was conducted with Falcon's standard 44mm core, whilst the fixings utilised were all as boxed and the leaf was produced by a third party manufacturer who produced the doorset to their standard production procedures.

Mark Percival of Falcon Panel Products comments 'By adding this extension to the Strebord scope and adding the BM TRADA Q-Mark Enhanced Lifetime Performance certification we are demonstrating to the market the strength and durability of the Strebord product and reinforcing its position as a market leading brand. Falcon Panel Products is the only company that complies and holds this certification. Our approach is one of responsible and assured supply'.

Not content with achieving the above,

the said doorset was then removed from the BM TRADA testing rig and further subjected to a 30 minute fire resistance test to BS EN 1634-1. The objective of the test was to see if the door could still prevent the spread of fire after years of continuous operation. Could it still perform the task it was originally designed for? The answer was yes, with the product maintaining integrity for a full 48 minutes before it ceased to satisfy the testing criteria. The leaf was unlatched, opening into the furnace, this being the most onerous configuration.

The results clearly demonstrated the ability of the Strebord product to continue to meet its requirements as a fire door even after years in daily use. The fact that the product successfully met the requirements of BS EN 1634-1 also paves the way for the product to meet the requirements for CE Marking when it becomes a mandatory requirement, possibly as early as mid-2015.

 For more information, go to www.falconpp.co.uk

Hotel Selects C-TEC's ZFP FIRE PANEL

C-TEC's revolutionary touch-screen controlled ZFP fire panel is now in residence at Manchester's magnificent Gotham Hotel.

Designed by celebrated Victorian architect, Sir Edwin Lutyens, the beautiful neoclassical building on King Street has undergone a multi-million pound transformation and is set to become one of Manchester's most exclusive locations.

Two 4-loop ZFP addressable fire panels protect the luxury hotel which has 60 bedrooms and four £300-a-night suites featuring 'indoor gardens'. One panel is located in the basement and one is situated in the permanently manned Manager's office to ensure staff are notified of any incidents. A stylish ZFP compact controller in reception displays the status of the fire alarm system at a glance.

Said Phil Farrell of Solid State, the specialist electrical installation company that completed the project: "Working at Hotel Gotham was an exciting experience as it involved installing new state-of-the-art equipment throughout and transforming an old disused building into a glamorous hotel within a short period of time."

A CCTV security system, access control system and one of C-TEC's SigTEL disabled refuge systems have also been installed at the hotel.

Now available with a graphical interface solution that allows users to view critical events, process alarms and keep secure system logs on a remote PC, C-TEC's touch-screen controlled ZFP panel can be configured to suit any application, from small 'one out, all out' systems to large multi-loop networked systems.



 For more information, go to www.c-tec.co.uk

TouchControl Fire Touchscreen from Advanced Sets the Standard

Global fire systems business Advanced has launched TouchControl, its new touchscreen fire system repeater and remote control terminal which features Active Maps and zone plans.

TouchControl uses its 10" HD touchscreen to deliver all the panel and network control and monitoring features you'd expect from Advanced, plus dynamic graphics and zone plans called Active Maps.

Active Maps allow any image from a technical drawing, a zone plan, photograph, even a google map image to be used to display fire info, with multiple views available allowing users to interrogate the status of zones in a site from different angles or scales. Advanced's Map App software makes it simple and easy to add map images and associate them with a zone.

When not used in Active Map view, it features a unique, colour-coded interface that clearly displays device, zone and network information, using the large 10" HD touchscreen to facilitate easy control and interrogation. Users can immediately identify zones and devices in fire, fault, disablement, test or normal operation via colour-coded status buttons.

TouchControl is a network node in its own right, working in standard or fault tolerant modes. Designed to be recessed and



flush fitting, its low profile design will enhance any architectural environment and can be used in areas from receptions to nurses' stations where network control, aesthetics or simply communicated detailed information are required. The background image can be easily changed to show any image from site plans to logos or products. A surface mount option is also available.

Another feature for its use in public areas is the ability for users to add presentations, company introductions, visitor boards or safety information to run when the fire screen is not reporting fire system information. As soon as the screen is touched or a fire condition arises, it reverts back to fire operations.

John Newton, Advanced's Products Manager said: "Advanced customers do not expect us to follow the herd, but deliver something innovative and more useful. TouchControl is absolutely unique and we think the right way to add touch technology to fire systems. We don't compromise the touchscreen by reducing its size to fit in a panel and we don't add cost to a panel that may be out of view. Instead we've developed a high quality touchscreen unit that has all the benefits a touchscreen can deliver plus more, such as Active Maps. We have invested significant time ensuring it is easy to install and configure, especially when it comes to adding maps and demand is already high."

TouchControl operates with Advanced's three levels of user control, accessed via passcode. Depending on the level of access users can: Evacuate/Mute/Silence/Resound & Reset; View fires/faults/disablements/alarms/inputs/outputs/supervisory and network via 'instant filters'; View/enable/disable zones and devices; Enable/disable outputs by type; Enable Walk Test mode; Test display/zones/outputs/buzzer and LEDs; Quickly access all zones in fire/fault/disablement/test via 'instant filters' and where allowed change status; View 1,000 general and 500 Fire event log and set the network time and date.

TouchControl is compatible with Advanced's MxPro 4 and 5 panels and Axis EN and Axis AU Fire Systems, with more to follow.



**Complete line of
Electric and Diesel
Fire Pump Controllers
with**



technology



- Built to standards
 - NFPA 20
 - FM approved
 - A2P
 - LPCB
 - EN12845
- ViZiTouch Operator Interface
 - 4.2" color touch screen
 - Quick and easy commissioning
 - User friendly operation



LISTEN • DEVELOP • LEAD

tornatech.com

 For more information, go to
www.touchcontrol.advancedco.com

SFRS Officer Appointed to NFPA Board

A Scottish Fire and Rescue Service (SFRS) officer has been appointed as the only European Director of an international organisation dedicated to eliminating deaths, injuries and losses through fire.

Founded in 1896, the US-based National Fire Protection Association (NFPA) is a not-for-profit organisation carrying out extensive research to develop training, standardise practices and improve the safety of both the public and frontline firefighters around the world. Assistant Chief Officer Robert Scott was voted onto the executive board of the NFPA's Fire Service Section at its annual general meeting in Chicago last month.

With the global organisation boasting more than 65,000 members his appointment forges a clear link between the SFRS and its counterparts overseas.

ACO Scott said: "I was delighted to be voted onto the executive board. The NFPA brings together officers from around the world, giving us the chance to share knowledge and benefit from each other's experience."

"Wherever they serve firefighters are devoted to saving lives and that shared commitment means we're always eager to understand how things are done elsewhere and learn from each other."

"It's an opportunity to share our experiences with those of colleagues from some of the world's largest and most prestigious fire and rescue services and it reflects the high regard in which the SFRS is held."

With more than 26 years' service in frontline roles, training and senior management, ACO Scott was recently awarded the Queen's Fire Service Medal – the highest accolade for fire service personnel throughout the Commonwealth.

Since the launch of the national service in April 2013 he has been a member of the SFRS Strategic Leadership team, serving first as the director of service delivery for the north before becoming director of strategic planning, performance and communications earlier this year. He will continue in this SFRS post and will carry out his new role on a voluntary basis.

Commenting on this appointment, the SFRS's Chief Officer Alasdair Hay said: "This is clearly a great honour for ACO Scott and it also highlights the standing of the Scottish Fire and Rescue Service within the global fire service community."

"We will always be committed to providing a truly world-class service, both in responding to emergencies and undertaking proactive work to prevent them from happening in the first place."



 For more information, go to www.nfpa.org

BIOex

Foam concentrates

*Fight the fire but
protect what's essential !*



In 2002, BIOex was already committed to the protection of our environment by launching the first fluoro-free foam concentrate.

Today, BIOex designs and manufactures fluoro-free foam concentrates tested and approved by our customers worldwide:

- ▶ ECOPOL: all-risks
- ▶ BIOFOR: wetting / foaming agent
- ▶ BIO T: the training concentrate

BIOex also offers a complete range of synthetic and protein based foam concentrates.

Certifications: EN1568, ISO7203, ICAO, IMO, VERITAS, LASTFIRE, GESIP, UL, FM, APSAD R12

▶ www.bio-ex.com



DA (graphisme) : www.galliamercent.fr

Advanced Consolidates Credentials by Joining Rail Industry Fire Association

Global fire systems business Advanced has recently become a member of the Rail Industry Fire Association (RIFA), reinforcing the company's credentials in the transport industry.

"We have a long track record in the railway and urban transport industry," comments Advanced's Marketing and Communications Manager Aston Bowles. "Our EN54 and UL864 fire alarm panels and systems are installed in some of the UK's and the world's leading facilities, including Waterloo and Kings Cross stations in London, the Crossrail development, many stations across the London Underground, the Istanbul Metro, the Tyne & Wear Metro and many more.

"Joining RIFA is a natural step for

Advanced and helps us consolidate our position in an industry with extremely rigorous fire safety standards. It will also allow us to learn more about a fast-growing and rapidly evolving sector," added Aston.

Advanced is constantly developing new products to meet the needs of the transport and wider fire protection industry. The company's recently-launched TouchControl touchscreen fire system repeater and remote control terminal is a 10" HD touchscreen with dynamic graphics and zone plans called Active Maps. Active Maps allow any image from a technical drawing, zone plan, photograph or even a Google map image to be used to display fire info. Multiple views allow users to interrogate the status of zones in a site from different

angles or scales, while Map App software makes it simple and easy to add map images and associate them with a zone.

About RIFA

RIFA is a global association established to share information, experience and best practice in the management of fire safety throughout the railway industry. Fire prevention within railways involves special consideration that requires understanding of the operational railway and its users. Whether it's a heavy haul goods operation, high speed rail, metro or light rail, there are impacts from fire that have to be considered. RIFA is an independent and authoritative source of fire safety information for rail industry best practice.

About Advanced

Advanced is a world leader in the development and manufacture of intelligent fire systems. The legendary performance, quality and ease-of-use of its products sees them used in prestigious and challenging locations all over the world, from single panel installations to large multi-site networks. Advanced products include complete fire detection systems, multi-protocol fire panels, extinguishing control and fire paging systems.



For more information, go to
www.advancedco.com



City of London School protected by Morley-IAS

The 1,000 pupils and staff at the 570-year-old City of London School – one of Britain's most photographed educational establishments – are now protected by a Morley-IAS by Honeywell voice alarm system.

Installed by Ardent Fire & Security in a major overhaul of voice alarm and public address technology, the school, which is on the Thames embankment near St Paul's Cathedral, now has a highly customised system that provides safety cover throughout its prominent site.

Replacing the previous obsolete system, Ardent, a Morley-IAS distributor, installed the Honeywell D1 rack and amplifiers along with 32 new speakers and new alert buttons. The buttons can be pressed to trigger specific public address messages in locations such as the swimming pool area and playground, while announcements can be made from both the reception desk and the office of the head teacher's personal assistant.



For more information, go to
www.morleyias.com or
www.honeywellnow.com

C-TEC to Exhibit New Innovations at Safety and Security Amsterdam 2015

Leading life-safety systems manufacturer, C-TEC, is exhibiting for the first time at SSA (Safety and Security Amsterdam).

New innovations to look out for at the show include C-TEC's flagship XFP addressable fire panel powered by its own revolutionary new CAST protocol, its ZFP touchscreen-controlled 1-8 loop addressable fire panel and an exciting new EN54-13 compliant conventional fire alarm system solution. C-TEC will also showcase its extensive range of call systems, automatic extinguisher panels and VdS-certified EN54-4 power supplies.

Said Stuart Mason, C-TEC's Export Business Development Manager: "SSA promises to be an exciting show for C-TEC as it attracts fire specialists and system integrators from all over the world. I am certain there will be lots of interest in the systems we have created for the European

market and I am looking forward to establishing new partnerships at the show."

An award-winning independent UK manufacturer of innovative life-safety equipment, C-TEC exports to over 60 countries worldwide and has been ISO 9001 accredited by the LPCB since 1994.

To find out more, visit C-TEC on Stand 08.112 at SSA (22-24 September, RAI Amsterdam Convention Centre) or at www.c-tec.co.uk.

 **For more information, go to**
www.safetysecurityamsterdam.nl





Safe-D® Clips





4 new enhanced FP cables

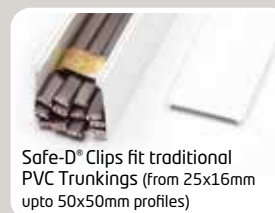


after 2 hour burn test

Secures cables at 930°C (+40°C -0°C) for at least 2 hours



Safe-D® Clips are quickest and easiest to install and are fully certified to satisfy legislative requirements to secure all surface cables in escape routes. When used with appropriate fixings they can securely hold bundles of cables on a surface at 930°C (+40°C -0°C) for at least 2 hours.



Available from most leading electrical trade counters

Tel: +44 (0)191 236 0960

www.d-line-it.co.uk

enquiries@d-line-it.com

Eaton JOCKEY Touch™ Jockey Pump Controllers – One Size Fits All

Why Touchscreen?

As the use of smart devices increases globally, color touchscreens are being incorporated into a wide variety of manufacturers' products. They are reliable, offer greater flexibility and are intuitive to the user.

The new JOCKEY Touch™ Jockey Pump Controllers from Eaton are the first series of controllers to incorporate a color LCD touchscreen with advanced features and functions, normally found only in full size Fire Pump Controllers.

The JOCKEY Touch™ LCD display unit allows the user to program basic system parameters via the Quick Setup menu, such as Date, Time of day, Start Pressure, Stop Pressure and Run Period Timer values. Alternately, full system parameters can be programmed quickly and easily using the standard programming menu prompts.

Global Reach

The JOCKEY Touch™ is suitable for use globally due to the wide supply voltage and frequency input ranges (3 phase – 220VAC to 600VAC 50/60Hz; 1 phase – 110VAC to 240VAC 50/60Hz) as well as the ability to select multiple languages, multiple agency approvals and a 55 degrees C rating.

Reduced Inventory

Due to these features being incorporated, the user can stock a minimal number of controllers to cover many different applications. Three models cover approximately 57% of possible applications, while ten models will cover approximately 92% of all applications.

Flexibility

As well as being flexible and intuitive, the JOCKEY Touch™ is the first jockey pump controller to incorporate voltage



measurement, history recording and a USB port for downloading message history and uploading new firmware and languages. The history recording can be used as a backup to the main fire pump controller, should it be required.

Additional flexibility is achieved by the inclusion of two Virtual LEDs that can be programmed for up to 22 different functions and will indicate in one of five selectable colors (Red, Orange, Yellow, Green and Blue). As well, multiple digital timers can be selected and programmed that give a countdown indication of time remaining.

Remote starting and stopping can be achieved using the customizable inputs and output relays.

Component Reduction

As a result of the advanced features and functions incorporated into the JOCKEY Touch™ controller, several common components such as fusing and transformers that are voltage and frequency specific are no longer required. This results in fewer components, less connection points and makes the controller easier to troubleshoot.

Future

The JOCKEY Touch™ controllers have been designed to cover standard and custom applications with the ability to comply with future code requirements and changes.

We encourage you to try a JOCKEY Touch™ controller today.



For more information, go to
www.chfire.com





World Class Manufacturer of Fire Pump Controllers

Manufactured and Stocked in Dubai

Eaton Fire Pump Controllers
are manufactured and stocked
at our Dubai Techno Park
manufacturing facility.
Contact us for details.



LMR Plus

Electric Fire Pump Controllers

- All Models Including:
Across-the-Line
Wye-Delta (Star-Delta)
Open/Closed
- Embedded Webpage
View Current Status, Set Points,
Diagnostics and History
- Communications
USB, Ethernet*, Modbus*

*Com option required.



DIESEL Plus

Diesel Engine Controllers

- Universal Supply Voltage
90-240VAC
- Dual Output 12 or 24VDC
DIP Switch Selectable
- Embedded Webpage
View Current Status, Set Points,
Diagnostics and History
- Communications
USB, Ethernet*, Modbus*

*Com option required.

All DIESEL Plus Engine Controllers meet FM1321/1323 requirements.



JOCKEY Touch™

JOCKEY Pump Controllers

- Color Touchscreen Display
- Supply Voltage
3 phase - 200VAC to 600VAC, 50/60Hz
1 phase - 110VAC to 240VAC, 50/60Hz
- Ambient Temperature
0 to 55 deg. C
- Five (5) built-in timers
- Voltage measurement
- History recording
- USB port
- Multiple languages



Powering Business Worldwide

Eaton Industries Canada Co.

10725 25th Street NE #124
Calgary, Alberta
Canada, T3N0A4
Tel: +1 403-717-2000
Fax: +1 403-717-0567
Email: chcfirepump@eaton.com
www.chfire.com

Follow us on social media to get the
latest product and support information.



STI Recognise the Importance of Reducing False Fire Alarms

Every false fire alarm causes major disruption to customer service, productivity or the general routine of any organisation. Beyond disruption, false fire alarms have a significant impact on the effectiveness of a fire evacuation strategy and may put the lives of staff, students and visitors at risk. Quick and appropriate reactions to a fire alarm may prevent a real fire from causing significant damage and disruption.

Clear, tough polycarbonate covers easily retrofit over existing call points, providing protection within minutes, where accidental activation is of concern. If malicious activation is likely to be a problem, covers with an optional, localised, alarm can be installed over a call point. Accidental false fire alarms (for example, a call point hit by a ball in a sports hall or heavy equipment within a warehouse, etc.) can easily be prevented by installing call point covers. Covers can also provide a level of weather protection from IP24 to IP56, ideal for use in extreme conditions, indoor or outdoor, such as wash down areas and saline atmospheres.

Safety Technology's Euro Stopper® is now available with an embedded unique substance that glows in the dark. The Glow Guide pigment will release light for up to 8 hours in darkness or dimly lit areas and charges up after only 30 minutes exposure to natural or artificial light. It is essential for use in emergency situations.

The Glow Guide is not the only new feature to the Euro Stopper – the

polycarbonate call point protector is now supplied in a kit form, allowing the user to assemble the product in the way which best suits their application, with the choice of red or green housing shell, language, mounting option, sounder and breakseal facility.

 For more information, go to www.sti-europe.com



Arson Prevention Forum to attend the Emergency Services Show

The Arson Prevention Forum will be exhibiting at the Emergency Services Show at the NEC, Birmingham, UK on 23-24 September.

Arson accounts for 45% of all fires attended in the UK and costs society more than £1 billion a year in insurance claim pay-outs. The Arson Prevention Forum was established in 1991 to spearhead and co-ordinate a national campaign

to reduce arson, raise awareness of the problem and bring together public and private sector organisations.

Lee Howell, Independent Chairman of the Arson Prevention Forum, and colleagues will be present at the Emergency Services Show, to answer questions and provide information.

Forum members believe that collaboration is the key to success. Working together to improve the effectiveness of prevention, protection, investigation and diversion activities will help reduce the incidence of fires and the associated cost.

Lee Howell, who is also Chief Fire Officer of Devon & Somerset Fire & Rescue Service, said: "Whilst the number of deliberate

fires is reducing, the cost to business, the government, the public and the insurance industry is not. This clearly emphasises that more needs to be done."

The key priority for the Arson Prevention Forum is to bring together key partners to share good practice and focus attention on arson as a key strategic issue. Initiatives already put in place by the forum include jointly funding the first Arson Task Force in the UK and jointly funding the pilot of Arson Combated Together, a teaching resource aimed at tackling firesetting behaviour in schools.

 For more information, go to www.stoparsonuk.org

Arson
Prevention Forum



Dr. *STHAMER* HAMBURG

FOAM FIGHTS FIRE

NEW!

MOUSSOL®-APS 1x3 F-0

EN1568 part 3 1A/1A,
LASTFire Tested

**We offer a full range of Internationally
Approved, High Performance, Environ-
mentally Compatible Fire Fighting Foams.**

**24/7 EMERGENCY
SUPPLIES** PLEASE CALL
+ 49 40 7361680

Liebigstraße 5 · 22113 Hamburg · Germany
Phone +49 40 73 61 68-0 · Fax +49 40 73 61 68-60
E-mail: info@sthamer.com



www.facebook.com/Dr.Sthamer

www.sthamer.com

Coopers Fire Ltd

FireMaster Concertina Fire Curtain Offers Unique Protection Solutions

Ensuring fire safety without compromising an intended architectural open plan design can be problematic, especially when protecting stairwells and atria.

The FireMaster® Concertina™ fire curtain from Coopers Fire is a unique folded vertical fire curtain barrier system developed to provide a bespoke alternative to fixed non-loadbearing walls, partitions and fire shutters.

It comprises technologically advanced fire-resistant fabric barriers encased in a compact steel housing. The barriers remain invisibly retracted until activated by an alarm or detector signal, at which time they descend safely to their operational position.

Suitable for protecting all building types, the FireMaster Concertina can be used as part of a fire engineering solution in commercial and industrial applications such as airports, shopping centres, offices and hotels or where the need for maintaining open areas for access is vital. It can be applied to atria, escalators, and stairs and will remain hidden until deployed.

It provides the same protection as a steel fire shutter but at a fraction of the size and weight. With no need for columns, corner posts, side guides and intrusive ceiling interfaces, it offers a revolutionary approach to building design, maximising floor space and increasing rental income.

Bespoke design

Available in closed shapes, such as squares and faceted circles, the FireMaster Concertina “closed” system is manufactured on a bespoke basis for each project. It is the first fire curtain



◀ The FireMaster Concertina fire curtain can be applied to atria, escalators and stairs and will remain hidden until deployed.

Image courtesy of Coopers Fire Ltd.

available in circular format without side guides and columns.

A range of ceiling interfaces are available, ensuring the barrier is totally concealed in the ceiling whilst still allowing access for service and maintenance. The unique patented SLAT™ (Self Levelling Access Trim) system can be utilised with suspended ceilings.

The FireMaster Concertina system can be provided in any width with a maximum drop of 8m (5m if 240 minutes of integrity is required). It complies with BS EN and AS standards and is certified to PAS 121: 2007 as offering up to 240 minutes of integrity and 120 minutes of radiation resistance.

The FireMaster Concertina system features Coopers’ patented Total Gravity Fail-Safe (TGFS) system, which ensures the barriers are deploy by controlled descent upon initiation or during any power or system failure. In the event of mains power failure, the barriers remain retracted using their own dedicated battery back-up power supply for a predetermined period (nominally 30 minutes). If signalled

to descend during this period, they fail-safe by gravity in a controlled manner to their fire operational position. The unique VarioSpeed™ function enables site specific adjustable deployment at synchronised velocities from 0.06–0.15 m/s.

The FireMaster Concertina system uses EFP™ 4/1000 glass fibre, stainless steel wire reinforced fabric, coated with a micronized aluminium filled fire retardant polyurethane. The fabric complies with the requirements of Class 0 to meet the statutory guidance in Building Regulations (E&W) Approved Document B (Volumes 1 and 2).

Advancing technology

Coopers Fire is dedicated to advancing fire and smoke barrier curtain technology and improving ways to safeguard life and property. This commitment to developing innovative products that are robustly tested and independently certified has meant that Coopers has become the benchmark used by Regulators, Architects, Engineers and other Fire Professionals worldwide.

With regular servicing and maintenance a legal mandatory requirement, Coopers Fire is the only fire and smoke curtain manufacturer and installer to be regulated and approved as an Independent Third Party Certification body, the IFCC Installers Certification Scheme.

FireMaster Concertina Closed Polygon with no side retention system	E180 EW60 (240 minutes fire resistance)	Unlimited m (w) x 5m (h)
FireMaster Concertina Open Polygon with side retention system	E60 EW60 (240 minutes fire resistance)	Unlimited m (w) x 5m (h)
FireMaster Concertina either Open or Closed Polygon	120 minutes fire resistance	Unlimited m (w) x 8m (h)

➔ For more information, go to www.coopersfire.com

Helping
to protect
the world's
iconic
buildings

Book a RIBA approved CPD Seminar on Smoke and Fire Curtains
www.coopersfire.com



LEADING THE WAY IN FIRE PROTECTION

VADS TO BE HAD!



C-TEC's addressable visual alarm devices and sounders are here!

Introducing C-TEC's new range of UK-manufactured visual alarm devices. Fully compatible with our XFP & ZFP range of XP95/Discovery fire panels, Compact, Hi-Output and Base variants are available, all designed to the relevant parts of EN54 parts 3, 23 and 17 (as indicated)



**Compact C-3-8 Ceiling
VAD c/w 91dB(A) Sounder**

- C-3-8 light distribution
- 14mA alarm current @24VDC
- IP21C rated
- Sounder, VAD-only and Voice Sounder variants also available



**Hi-Output W-3-8 Wall VAD
c/w 100dB(A) Sounder**

- W-3-8 light distribution
- 14mA alarm current @24V DC
- IP33C rated
- VAD-only and Voice Sounder variants also available



**C-3-8 Base VAD
c/w 91dB(A) Sounder**

- C-3-8 light distribution
- Ideal for mounting under fire detectors in corridors, etc.
- Sounder, VAD-only and Voice Sounder variants also available

**VAD SYSTEM
DESIGN GUIDE
NOW AVAILABLE
CALL 01942 322744
FOR A COPY**

01942 322744

sales@c-tec.co.uk

www.c-tec.co.uk

You're safe with C-TEC



ULTRA RELIABLE SMOKE DETECTION



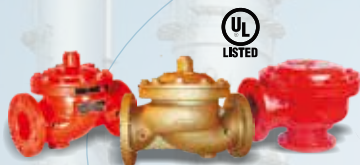
- Learn about the threat of fire long before combustion
- Reduce false fire alarms in hostile dust rich environments
- Minimise costly business disruption and insurance claims

FAAST aspiration detection from Honeywell, alerts you to a potential fire hazard before it has even started. Advanced filtration and Dual Vision technology delivers the earliest and most accurate fire detection with class leading false alarm immunity.

To find out more visit www.faast-detection.com



WATER SPRAY NOZZLES



DELUGE VALVES

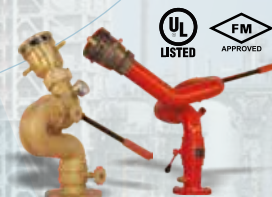
**MANUFACTURING EXCELLENCE
SUPERIOR PERFORMANCE
WORLD-CLASS FIRE FIGHTING
PRODUCTS**



ALARM VALVES



FOAM EQUIPMENT AND SYSTEMS



MONITORS

HD Fire Protect Pvt. Ltd.

C-3/6, Nandanvan Industrial Estate, LBS Marg, Thane - 400604, India Tel: +(91) 22 25826793 Fax: +(91) 22 25812524
info@hdfire.com www.hdfire.com

Honeywell

Meeting the Challenges of the Harshest Industries

The threat of fire is ever present in recycling plants – a reality reflected in the ever-more stringent regulations and insurance requirements governing the industry. Stored paper, plastic materials and glass pellet processing all have high associated risks and fires that result can be both devastating and costly; causing total asset loss, pollution to the local environment and disruption to nearby urban settlements at worst and unnecessary process downtime, combined with the costly redirection of contracted waste coming on to a site at best.

The potential ferocity of waste recycling fires is highlighted by two recent incidents – the first occurring at a Manchester (UK) plant in March 2015, which lasted for several days before being extinguished by 40 firefighters. One month later a devastating blaze took place at a Lancashire (UK) plant, requiring 15 fire engines and over 100 firefighters.

Today's recycling plant safety managers really do have a tough remit; not only are the fire risks considerable, but waste recycling plants present some of the most challenging environments for fire detection technologies, due to a variety of adverse conditions; a high prevalence of dust, environmental transients and high humidity can cause frequent false alarms in many traditional systems. Many plants experience a high frequency of false alarms (multiple events on a weekly basis), which has historically led some operators to implement solutions that only offer "bare minimum" coverage when application risks demand the highest safety provision and most accurate, earliest detection to ensure adequate protection. This is a trend that has no doubt helped catalyse the emergence of new regulations designed to improve site safety, such as those issued in 2014 by the Waste Industry Safety and Health Forum (WISH) in the UK.

Responding to challenging fire safety issues

Despite the pressure of costly insurance stipulations, evolving regulatory compliance requirements and mounting costs that threaten to put many firms out of business, it appears that there is a solution in the form of new emerging fire detection technologies.

Aspiration Smoke Detection (ASD) – cited as one of the most effective and safest fire detection technologies recommended in the WISH guidelines – presents one of the most effective methods in terms of safety and performance. Advanced, next generation ASDs like FFAST from Honeywell, go one step further, by addressing application challenges and removing false alarms and historic detection issues, providing welcome relief to every recycling plant safety manager's concerns.

Premier Waste (UK) PLC is a UK-based plant that has seen a dramatic improvement from the recent integration of Honeywell's FFAST ASD system. The 200,000 ft² facility, located in Birmingham, represents one of the most challenging the industry has to offer, with an extreme high-dust atmosphere and moisture prevalence; a misting system is in constant use to

damp down dust and odour issues. 24/7 operation and processing for the recycling of construction and commercial waste, including packaging, creates considerable fire hazards. In fact, in addition to damping down materials, Premier Waste (UK) PLC has over 15 fire marshals carrying out fire checks every 60 minutes, as well as an on-site fire engine and water tank holding in excess of 620,000 litres of water, along with five fire hydrants. Having previously used heat detectors to monitor the site, Premier Waste (UK) PLC was experiencing a high instance of disruptive false alarms; as frequently as every other day, along with a potential timing delay from awaiting heat spikes to trigger the system.

Challenges and requirements

Premier Waste's Operations Director, Wayne Clark, describes the fire detection challenges on site and why aspiration smoke detection technology was the only solution capable of mitigating risks effectively. "We had been experiencing

▼ Premier Waste (UK) PLC has an extremely dusty atmosphere, which can be problematic for most traditional fire detectors.



Image courtesy of Honeywell

a high incidence of false alarms and the use of heat detectors didn't provide the earliest warning that would allow us to minimise fire events. Aspiration smoke detection is the only technology that can cope with the extreme environments we face with high particulate levels; a device offering the earliest fire detection was essential. The waste industry is growing and safety concerns are catalysing the rapid evolution of legislation and insurance requirements; today you need to ensure you are doing all you can to exceed the guidelines – we wanted to implement a solution that offered the highest safety provision.

“Environmental conditions can fluctuate considerably from area to area and we required a whole plant monitoring solution. Ease of integration, installation and ongoing use were also key prerequisites; systems can be complex to commission and they need to be set up and maintained properly to be effective – especially under the conditions of high dust and constant water ingress. The maintenance of heat detectors by third party providers was not ideal for us – we needed an easy, cost-effective solution we could regularly maintain in-house.”

The benefits of next generation ASD

Having decided smoke aspiration technology was the only truly effective method, Premier Waste (UK) PLC installed Honeywell's FFAST ASD; a ground-breaking, next generation solution offering the earliest, most accurate fire detection and incorporating advanced technologies specifically designed to meet the World's most challenging monitoring environments like waste recycling plants.

FAAST's ability to accurately identify low levels of smoke (down to invisible concentrations) – even in high dust/moisture atmospheres – made it stand out from the competition, as Wayne explains. “The combination of accuracy, ultra-sensitive detection and proven false alarm immunity in high dust/moisture environments made FFAST the most attractive option for us from a safety perspective. Added to this was the devices ease of installation, use and ongoing maintenance by in-house personnel. Designing the pipe infrastructure and commissioning the system was easy with the user-friendly PipelQ software provided. FFAST is also great because it auto-learns the environment and can be used across the whole plant – it remains stable even in fluctuating conditions.”

A perfect fit at the perfect price?

It is only natural to assume that such an effective and technologically advanced fire detector would come with a high associated cost, but interestingly, this is not the case; Premier Waste (UK) PLC achieved maximised plant detection coverage with just eight units and FFAST also reduced the operational cost of fire detection on site. Wayne explains how flexible configuration, testing and ongoing use provided the perfect fit for the plant in terms of both safety provision and affordability. “The system was installed with water traps, which prevented issues from water ingress and the system was designed with ground level testing. The use of airlines and pressure vents at ground level meant that we could easily test the system ourselves (with no need for process downtime or the use of access towers), in just 15 minutes. FFAST's unique technology helps prevent pipe blockages and local airline and pressure release valves at ground floor ensure that dust/water ingress into the pipework can be handled without the device going into fault.

“FAAST has helped us reduce our operational costs, whilst enhancing safety. We now have no disruptions when testing/maintenance is taking place, no site downtime from false alarms or faults, no third party costs to keep the device maintained and we've replaced the heat detectors with just eight devices. When a fire event occurs, we can now respond much quicker, and this reduces business interruptions as well as risks. FFAST exceeds all expectations and lives up to its claims; false alarms used to be a regular annoyance, but I can't remember the last one we had with FFAST. Its ability to provide the earliest fire event warning gives our marshals more time to implement counter measures and reduce the impact of an incident. We can easily maintain the system ourselves and achieve maximised uptime – no matter what the changing environmental conditions. FFAST has provided us with a solution designed to exceed insurance and legislative requirements for many years to come and we are really delighted with its result.”



Image courtesy of Honeywell

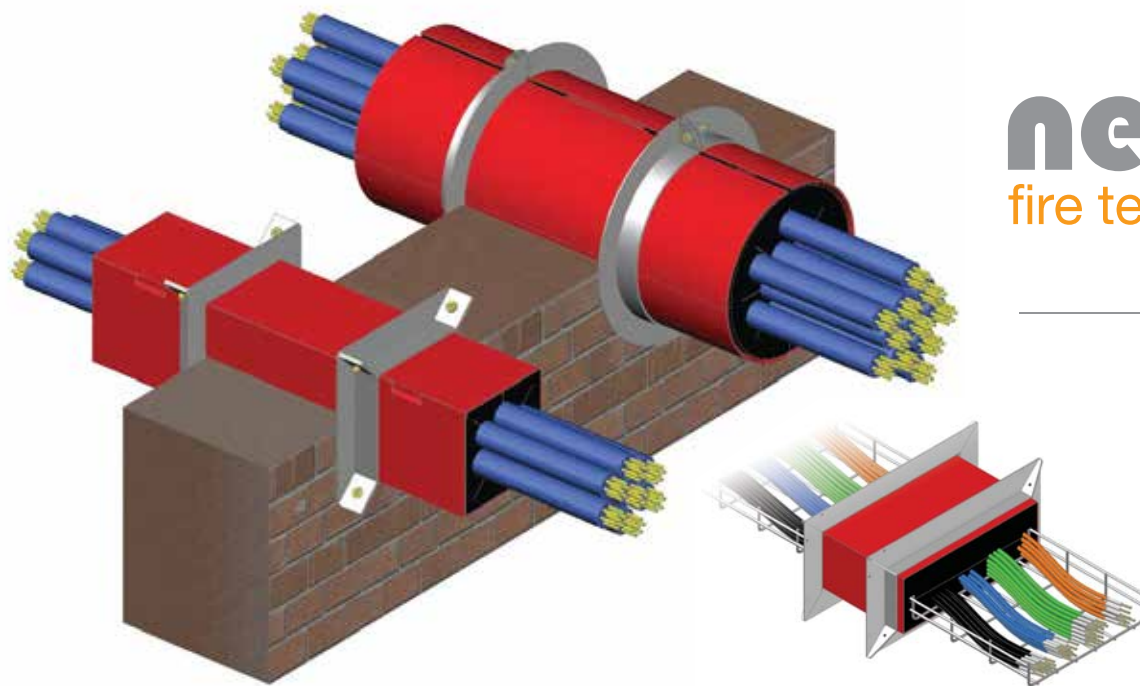
▲ Honeywell's FFAST ASD helps plants enhance safety and reduce the ongoing cost of fire detection.

Premier Waste (UK) PLC's experience highlights most effectively the real-world value that ASD technology can bring to challenging fire detection environments, as Tim Checketts, Business Manager for Honeywell Fire Safety comments. “Recycling and waste management safety managers have a tough remit and seemingly unsurmountable issues to overcome. This is why we innovated FFAST, and evolved the concept of ASD into one that can truly meet the needs of the World's most challenging fire detection applications, through the application of pioneering three-stage filtration techniques, unsurpassed environmental transient stability and user-friendly features like simplified ground level testing and remote monitoring capability with automatic system updates via email to smart phones or portable devices.

“FAAST has been independently tested by the University of Maryland and is proven to be 300 times more effective than any comparable detection method. Industry feedback from recycling plants like Premier Waste (UK) PLC proves that our technologies provide greater protection of people and processes, combined with affordability and ease of use. This is great news for a vital and growing industry that has been historically plagued by safety challenges, high fire risks and mounting operational costs.”



For more information, go to
www.faast-detection.com



neutron
fire technologies ltd

Firebreak Service Transits

- Tested to BS EN 1366-3
- Designed for single or multiple cables
- Easy to install and alter cabling
- Use in floors and walls - including drywall
- Easy retrofit design

Fire-stopping Business Critical Cables

Even a 'small,' fire lasting a short period of time can pose a significant threat to personnel in the vicinity. Moreover, the affects of fire, smoke and water damage on business interruption, even for a relatively short time can be disastrous.

Fire resistant walls and floors penetrated by data and telecommunications cables are at particular risk if these openings are moderately or highly active, i.e. where new or replacement cables are frequently being installed. If insufficient care is taken in re-installing the passive fire protection seals or the seals are not appropriate for the type of penetration then they won't perform if they ever need to.

Firebreak Service Transit devices are designed and rigorously tested to prevent the spread of fire and smoke from one compartment to another where these are breached by electrical, data and telecommunications cables. These fully retrofittable devices do not require the use of putties, sealants or coatings and can accommodate few or many cables - even up to full size cable ladders.

Firebreak Service Transits are round, square or rectangular powder coated steel sleeves with an inner lining of specially formulated intumescent material. When exposed to approximately 150°C the intumescent expands to many times its original volume, sealing off any voids to prevent the passage of fire. The unique flange for the devices enables them to be attached in place without the use of mechanical fixings into walls or floors.

Used worldwide in hundreds of complex environments, Firebreak Service Transit devices are tested and approved by independent third party laboratories such as Underwriters Laboratories, UL. Firebreak Service Transits are easy to install and require minimal maintenance.

When it comes to business critical fire sealing of cables - in data processing centres, banking and finance buildings, TV and media studios, apartment buildings, hotels, office complexes, hospitals, airports, retail centres, etc - rely on the proven solution - Firebreak Service Transits.



Shire Hall, Lostwithiel,
Cornwall PL22 0BS UK
T: +44 (0)1208 871185
F: +44 (0)1208 871254
E: sales@neutronfire.com
W: www.neutronfire.com

h i g h p e r f o r m a n c e f i r e s t o p p r o d u c t s

Advanced Intelligent Fire Alarm and Suppression Control for Irreplaceable Magna Carta

One of the most famous historical documents in Britain, if not the western world, is being protected by extinguishing and fire alarm panels from Advanced with installation by Reflex Systems.

Sealed by King John at Runnymede in 1215, Magna Carta is celebrating its 800th anniversary (the actual anniversary is 15 June). It is the first example of an absolute monarch surrendering some of his powers, the beginning of a process that led eventually to our current system of government and the prototype for democratic government all over the world.

The version protected by Advanced is particularly precious being one of only four surviving original 1215 Magna Carta sealed by King John and is kept in a special vault at Lincoln Castle, itself a Scheduled Monument, alongside Magna Carta's sister document The Charter of the Forest (1217).

Lincoln Castle, one of the best preserved in England was constructed in the 11th Century by William the Conqueror, and is one of only two to have two mottes. The fire and suppression systems installed by long-time Advanced partner Reflex Systems incorporate two MxPro 5 panels in the main heritage centre and the former Victorian prison building, which closed in

1878. Advanced's ultra-dependable ExGo extinguishant release system has been installed in the Magna Carta vault.

ExGo has been developed specifically for sensitive and strategic assets such as server rooms, historic and cultural attractions and control rooms. It has been installed in high-profile buildings across the globe, including the Romanian National Library and along oil pipelines in Sudan.

MxPro is the industry-leading multiprotocol fire system. Offering real choice and flexibility, it includes two panels ranges, the EN54-2&4 approved MxPro 4 and EN54-2,4&13 approved MxPro 5. It offers four protocols, Apollo, Argus, Hochiki and Nittan and a completely open installer network that benefits from free training and technical support.

John Pye, Managing Director of Reflex Systems said: "Lincoln Castle required an open protocol fire system and we knew that Advanced panels could deliver maximum reassurance and long term reliability. Having worked with Advanced in the past, we knew that the equipment would be of the highest quality for such a historic building plus the system offers the flexibility to meet future requirements."

MxPro 5 panels can be used in single loop, single panel format or easily configured into high speed, 200 panel networks covering huge areas and tens of thousands of field devices. In total, one MxPro 5 four-loop panel was installed in the main prison building and one MxPro 5 two-loop panel was installed in the heritage centre.

ExGo is suitable for almost all single-flooding area applications and includes a range of control options and devices. It is approved to EN54 parts 2, 4 and 13 and EN12094-1 and is among the first systems to combine these with EN12094 Part 3 in a single solution. EN12094-3 relates to the integrated manual release on the front of the panel. ExGo can be integrated into Advanced's Axis and MxPro fire panels, or any third party fire system.

A spokesperson for Lincoln Castle



▲ One of the original remaining copies of the Magna Carta.

commented: "We're very pleased with the Advanced systems installed by Reflex. As the Castle is a listed building, it was essential that the panels and detectors be as discrete as possible, particularly in the prison and the Magna Carta Vault. This year marks the 800th anniversary of the sealing of Magna Carta and we are happy that our visitors will be able to see one of the four original copies under the protection of Advanced panels."

Neil Parkin, Sales Manager for Advanced added: "Advanced fire systems are famous for their quality and ease-of-use and being specified to protect life and cultural assets of this importance is testament to our work to stay at the forefront of the market. As a company we are proud of all of our jobs but this one is very special. They don't come up very often and it says a lot about Advanced products that we are the first choice."

Advanced is a world leader in the development and manufacture of intelligent fire systems. The legendary performance, quality and ease-of-use of its products sees them used in prestigious and challenging locations all over the world, from single panel installations to large multi-site networks. Advanced products include complete fire detection systems, multi-protocol fire panels, extinguishing control and fire paging systems.



For more information, go to
www.advancedco.com

▼ Lincoln Castle Vault,
home to the Magna Carta.



TouchControl[®]

Fire Touchscreen. Remote Control Terminal. Active Maps.



 **Advanced**
The Standard in Fire Systems

TouchControl is Advanced's new touchscreen remote control terminal & repeater. It delivers network monitoring and control as well as active maps and zone plans, all in a package that enhances any architectural environment and is easy to install and configure.

TouchControl includes all the control and indication options you'd expect from Advanced, all managed via its unique 10" HD interface. For the first time there's a fire system touchscreen that looks as good as it performs.

To book a demo or for more info visit touchcontrol.advancedco.com



Tel: +44 (0)1670 707 111 Fax: +44 (0)1670 707 222
Email: sales@advancedco.com Web: www.advancedco.com

 **Advanced**
The Standard in Fire Systems

Should the Fire Industry Compromise on Touchscreen Technology?

The fire industry has experimented with touchscreens for a number of years, mainly adding small, less effective technology into fire panels. The result is increased panel costs, and compromised panel and network control because the screens are too small to be really useful and many have not taken advantage of the real benefits a touchscreen can deliver.



John Newton

John Newton is products manager at global fire systems business Advanced. Responsible for all of Advanced's new innovations and multiple product lines, he started his life in the fire industry as an installation, servicing and commissioning engineer and has worked in sales, technical and now products. During his 30 year career he has worked for some of the world's biggest fire detection and alarm businesses.

Advanced has recently completed a three year development project to deliver a 'no compromise' touchscreen solution to the fire industry in the shape of its TouchControl repeater and remote control terminal. John Newton is the product manager behind the project:

"We are certainly not the first to deliver a fire touchscreen," he said. "Many manufacturers have launched them before us and some have advantages. As a business though, we were never convinced that what was being delivered really fulfilled the brief. We made the decision to take our time and get the spec right.

Why a Touchscreen?

"The first question was why would you want a touchscreen in a fire panel? 'To touch' is the obvious answer, and that really means

control and reporting. To have a large enough screen area to do real monitoring and control meant the screen needed to grow considerably, and TouchControl has a 10" HD screen, one of the largest available.

"This screen size then gives you the opportunity to design a really effective user interface. Our first designs didn't work well in initial customer testing, so we started again from scratch and delivered the new navigation system which really does deliver.

It uses a series of 'buttons' that include colour coded status indication and all available device and zone info. One of the key benefits of the touchscreen is the amount of info you can display in one screen, way more than a traditional panel or repeater display. Of course doing this in a useable interface is the real trick.

TouchControl delivers 'at a glance' oversight and easy control of the panel or network right down to zone and device level. Users can immediately identify areas in fire, fault and disablement, test etc.

▼ Making the touchscreen a panel in its own right makes ease of installation a critical issue.



Image courtesy of Advanced

Active Maps and Zone Plans

"A unique feature and a market first is Active Maps and Zone plans, a new way to monitor fire systems using dynamic graphics, that can be made up of anything from CAD drawings to photographs. Some fire alarm graphics systems can be time consuming and complicated, but we have made it very easy to add them to the device using our new Map App software.

"A larger screen means that it definitely couldn't sensibly become part of the fire panel, and we were adamant we did not want add cost to our panels. So early in the specification stage TouchControl became a repeater and remote control terminal.

"We were then adamant that it must deliver new features and services specifically suited to touchscreens, and perform all the functions an Advanced repeater/remote control terminal does currently.

"Then when we looked at where customers would install the product, which is receptions, lobbies and public areas, and it became very obvious TouchControl needed to look aesthetically very high quality, and to enhance these often expensively designed areas.

Low Profile

"TouchControl is designed to be recessed (though you can surface mount it) and has a low profile bezel to both secure it (a standards requirement), and finish off the looks. We designed it to EN54-2&4 this meant adding in LED indicators for fire, fault etc, not just with standard LEDs but in keeping with the concept.

"The choice of screen technology was also a large area of debate. Capacitive screens – as used on most phones and tablets – are ubiquitous but the underlying technology changes often. The other technology, resistive screens are more common in industrial settings, importantly they respond, even to gloved hands, (thinking of the fire and rescue services or nurse stations), and are more robust with a technology that has the same long product lifetime as an Advanced panel.

Easy Install and Config

"We also spent time looking at how TouchControl would be installed, in both first and second fix, right through to config and maintenance, ensuring it was easy at every stage. We developed a new install system, the backbox goes in and wiring terminations are made off. Then the screen is cable



Image courtesy of Advanced

clipped in and slides into the housing. All Active Maps and zone plans are added via a microSD card that slots into the PCB.

"Configuration is fast and simple via our config tool and all device, zone text etc is imported from the fire system. It's up and running very quickly. Users can use a number of on board screen backgrounds or can import their own, which could be a logo, picture, instructions you name it.

"The device can also run in Presentation Mode. This means it will show a timed series of slides that could be site marketing material or health and safety info, on a loop. However when the screen is touched or when a fire signal or any other signal from the fire system is received, it instantly returns to core fire operations.

Control Options

"To ensure system security, TouchControl works via Advanced's three-level passcode system. At level one users can view information only and can evacuate, reset, resound, mute, silence and reset using a passcode. At level two they can control the network and in level three change configuration settings. A passcode is required to move between each level."

"On receiving a Fire signal the interface immediate defaults to a screen showing the latest fires. Users can then proceed using the status buttons or use Active Maps to show the position of the fire (and zones in other status types such as fault, test and disablement) using graphics. By using different building views at each level the user can zoom in an out of the zone in question from a site wide view to a detailed plan."

▲ To take advantage of the unique features a touchscreen delivers a unique interface with Active maps was developed.

Depending on the access level, user can: Evacuate/Mute/Silence/Resound and Reset; view fires/faults/disablements/alarms/inputs/outputs/supervisory and network via 'instant filters'; view/enable/disable zones; view/enable/disable devices; enable/disable outputs by type; enable Walk Test mode; test display/zones/outputs/buzzer and LEDs; quickly access all zones in fire/fault/disablement/test via 'instant filters' and where allowed change status; view 1,000 general and 500 Fire event log; and set network time and date.

The Future

John summarised: "TouchControl is an exceptional product and the feedback from our customers has been overwhelming and positive.

"It has been an exciting product to bring to market. The fire industry is quite right to look at consumer technology and see what part it can play in enhanced fire alarm and detection systems. The real issue is that in our, long lifecycle, standards-led market that's focused on life safety, we are more limited. However, TouchControl has also proved that we should not compromise. If we can do something better, we should try because our journey, which started with 'why?' has delivered something with numerous unique new benefits."



For more information, go to
touchcontrol.advancedco.com



Your Safety is what drives us.
Every Single Day.



Gallet F1XF Helmet



EVOLUTION 6000
Thermal Imaging Camera



ALTAIR 5X and ALTAIR 4X
Multigas Detectors



alphaSCOUT
Monitoring System



SCBA System



For further information
visit **our market page**

Designing for Fire Safety – Turning Aspiration into Reality

In the grand scheme of things, where does the issue of appropriate fire safety fit within the conceptual design of a building? In all probability it may not always sit at the top of the client's priority 'wish list' of key considerations, but should it?



Wilf Butcher



Wilf Butcher is CEO of the Association for Specialist Fire Protection.

Any building design will start with a client vision from which the architect, structural engineer and, increasingly, the fire engineer will need to convert the client's aspirations into a practical and functional design that can be constructed within the client's budget.

Long gone are the days when a designer was shackled by the constraints of prescriptive fire codes, leaving today's fire engineer free to model alternative solutions that will satisfy the relevant national building codes.

So far so good, but there are two fundamental questions that need to be considered when addressing a client's brief in relation to the required fire strategy, and these are:

▼ Is the objective to protect people or the building and its contents from fire?

- Is the objective to protect people from a fire within the building and allow adequate time to escape, or
- To protect the building and its contents from a fire?

In reality the two approaches will result in very different fire safety solutions. If protecting the building itself from fire is not seen as a concern, then it can be designed to meet the minimum building codes required to ensure safe evacuation. In contrast, designing to protect the building and ensure safe evacuation may also determine whether, post fire, there is a building/business to return to at all.

The most recent fire statistics for England and Wales show there were less than 300 deaths in building fires in 2013/14, and, of these, the majority took place within dwellings. However, it is generally believed that over 40% of businesses are out of business



Image courtesy of ASFP

within twelve to eighteen months of a fire, not only leading to substantial insurance losses, but often resulting in unemployment, which in turn may have a major impact or knock on effect within the local community and its economy.

Developing a fire strategy

To ensure the client's needs are met, the designer should clearly explain that the requirements in the Building Regulations are not aimed at protecting buildings or the businesses within them, but only at ensuring minimum life safety standards.

He should also explain that there are a range of factors that impact on the success or failure of a fire safety strategy over the lifetime of a building.

Fire protection solutions are a mixture of both 'active' and 'passive' measures that come together to achieve an overall solution, including:

- Fire detection
- Extinguisher systems
- Sprinkler / mist systems
- Signage
- Structural fire protection
- Fire containment
- Flame retardancy
- Evacuation procedures

Other key considerations include fire engineering, fire safety enforcement, progressive developments in modern methods of construction, and appropriate ongoing fire risk assessment. Fire safety therefore is made up of many disparate

disciplines, not always working in as joined up a way as may be assumed, leaving all those involved in such processes to ensure that the client's initial aspirations within the original brief are met.

Appropriate fire engineering

First and foremost, the client needs to be clear in terms of how he wishes his building to perform in a fire. This requires the building designer to ask a number of critical questions about key aspects of the client's business needs, since this will impact on the fire strategy. For example, if the business is to survive:

- What is the maximum acceptable damage value?
- Should any fire be contained within a defined compartment area?
- How quickly should the fire be extinguished from the time of ignition?
- How quickly should the building be reoccupied or trading?

Fire safety enforcement

A Building Control Authority will approve a fire engineered design provided that it complies with the minimum fire code requirements for life safety. This does not mean that the building will be protected from fire, or that any attending fire service will attempt to save the building where there is no threat to life safety.

Only by including additional measures recommended by the client or his insurer will protection of the building and its contents more likely be assured.

Modern methods of construction

One of the key aspirations in the commissioning of any building nowadays is one of thermal efficiency and carbon neutrality. The designer now has a wealth of building materials at his disposal to meet such 'green' credentials. But a key consideration that must be addressed is how well will these materials perform in a 'real fire' scenario.

This is of particular importance where a fire engineered solution is employed, since this may have resulted in a reduced use of both active and/or passive fire protection measures. This makes the selection of building materials and the expertise employed to install them of paramount importance. It is critical to ensure that:

- A** The product /system supplier can demonstrate by defined national testing standards (and not simply a small scale ad-hoc test), that the product or system can evidence appropriate performance in the conditions outlined within the building design chosen.
- B** The installation of such products or systems is undertaken by competent installers who can demonstrate such competency via a third party audited process. In the UK, this would require a contractor to have gained third party certification via a UKAS accredited Certification Body.

On-going fire risk assessment

The design and construction of a building is but the start of the process. How the building is subsequently managed and maintained will prove vital in terms of maintaining the designer's or fire engineer's perceived fire strategy.

How well a building owner understands what may well be complex fire engineered solutions will become vital to ensuring that the building is managed and maintained to ensure that the fire performance of a building remains fit for purpose.

Just over a decade ago, the ASFP took the lead in a Government-sponsored programme where independent research on fire safety provisions in a wide variety of nominated types of buildings was collected.

◀ Passive fire protection installation must be undertaken by competent installers.



Image courtesy of ASFP member PS Applications Ltd



15th International Water Mist Conference

28th and 29th October 2015

Amsterdam, Netherlands
Mercure Hotel Amsterdam City

Sponsors:



Honorary Sponsors:



For further Information visit:
www.iwma.net



Image courtesy of ASFP

In the vast majority of buildings inspected, a high percentage of compartment walls were either defective, through poorly installed fire stopping of penetrating service systems, or invalidated by incompetent maintenance, or worse no fire protection measures at all.

It follows that for any fire engineered building to continue to perform its designed function, it is essential that the fire provision of the building as a whole, is maintained adequately throughout its entire working life.

This will require regular assessment by a competent fire risk assessor, the frequency of which will be dictated by the building's risk profile.

It is important to ensure that all activities within the building that might affect its fire performance are monitored and responded to where necessary. This is essential when allowing follow on trades to undertake work that may for example, breach the building's compartmentation.

Whilst it should be expected that any follow on trade is vetted to ensure that they are competent to undertake the work in hand (e.g. the installation of new telecommunication cabling), it should not be assumed that they are competent in terms of how to breach and reinstate the fire compartmentation provision.

Damage to the compartmentation can significantly compromise the intended fire provision of a building, leaving the expected fire performance in question.

Legal liability

Those involved in the provision of fire protection, at any level, share liability for its usefulness and its operation when needed in fire, and that liability will still be there in the event of a court case.

If it is your responsibility to specify the materials and/or appoint the installation contractor, it is also your responsibility to ensure that they can prove competency for the fire protection materials used, or the works to be carried out. For the building owner, it is their responsibility to ensure that any installation of the fire protection provisions within a building is undertaken by those with sufficient competency.

The Association for Specialist Fire Protection's (ASFP's) *Guide to Inspecting Passive Fire Protection for Fire Risk Assessors* offers essential guidance to building owners and risk assessors, while *Ensuring Best Practice for Passive Fire Protection in Buildings* defines the roles and responsibilities of professionals with responsibility for the fire safety of a building throughout its

▲ **Building design will start with a client vision from which the architect, structural engineer and, increasingly, the fire engineer will need to convert the client's aspirations into a practical design.**

lifecycle. It includes advice for the client/developer, designers, main and specialist contractors, manufacturers, suppliers, regulators and enforcers, as well as the building occupier.

Lifetime protection

Turning aspiration into a reality is not an easy science, particularly when one considers the plethora of issues that needs to be considered during the design, construction and management of a building.

Whilst the life span of a building can be measured in decades, its journey from construction to demolition may be tested at any stage in terms of its fire performance. Should such an unfortunate occurrence take place, then that initial briefing between the designer and the client will prove vital in terms of how the building responds, and whether there is a business to return to.



**For more information, go to
www.asfp.org.uk**

YOUR PATH TO SAFER BUILDINGS



Testing and Certification for Market Access to Europe, Middle East and North America

Delivering a vast portfolio of global market access solutions, UL provides the highest level of regulatory acceptance and market recognition for the building and life safety sectors. UL offers a wide range of testing and certification services to meet your global certification requirements for fire safety, building materials, life safety and security, fire suppression, personal protection equipment and many more.



**For additional information, please visit www.ul.com
or email info.eu@eu.ul.com.**



UL, the UL logo and the UL certification marks are trademarks of UL LLC © 2015
All other marks are the property of their respective owners.

Petroleum Storage Tank Facilities – Part 1

In today's fire service we tend to focus our pre-planning and training for the "bread and butter" operations that we encounter daily.



Craig H. Shelley
FIFireE, CFPS, Retired Chief

Craig is a 45-year veteran of the fire service. He served with the FDNY for 26 years retiring as the Chief of Marine Operations. Currently, Craig is an Assistant Chief with Industrial Emergency Services (IES) and Manager of Marine Operations. In addition, he is the CEO of World Safe International.



Sue Tarantino
BS, MBA, Retired Battalion Chief

Sue is a retired 27-year veteran of the Charlotte (NC) Fire Department. She is currently a Division Chief with Industrial Emergency Services (IES) and Assistant Manager of Marine Operations. She also serves as a senior fire protection specialist with World Safe International.

These 'bread and butter' operations are generally single and double residential structure fires, multiple family structure fires, hi-rise commercial and office fires, and assorted emergencies that we encounter frequently. We are creatures of habit and feel most comfortable with what we respond to most frequently. While these incidents are usually high frequency/low to medium risk incidents, this tends to be our focus. We are sure that most jurisdictions have industrial and commercial facilities that the firefighters pass frequently without giving them a passing glance. It is fires and emergencies at these facilities that we classify as low frequency/high risk events.

One type of facility that we would like to focus on in this series of articles is the petroleum storage tank facility. We rarely hear of a storage tank fire today, because the industry has improved on the design, construction, and fire protection requirements for these facilities. It is interesting to note that over the years the number of fires in storage tank facilities has decreased, but the actual tank sizes have increased. The larger tank sizes actually increase the hazard. A fire in these larger tanks can be extremely disruptive to business continuity, costly in terms of property damage, create environmental issues, affect interstate commerce and create negative public opinion. When a storage tank fire involves the full surface of the product contained within the tank (hereafter called 'full surface fire'), it will require a large commitment of resources, both equipment and human, and will require an extensive logistics structure. On a positive note, the improvements to the various codes and standards developed and maintained by the American Petroleum Institute (API) and

the National Fire Protection Association (NFPA), along with proper enforcement of these standards and codes by the authorities having jurisdiction, have reduced these incidents to the lowest levels in decades.

The above mentioned bulk storage tank facilities can be located almost anywhere, from large refinery and petro-chemical plants to smaller bulk storage plants with loading terminals. In between we may have large marine terminals and smaller ethanol refining facilities. In this series of articles we will focus on the types of storage tanks, fire suppression systems, firefighting operations, and pre-incident response planning.

Types of Storage Tanks

In this article we will focus on above ground atmospheric petroleum storage tanks. These tanks range from diameters of 3.048 meters (10 feet) to over 106.68 meters (350 feet). In some instances, there are tanks exceeding 121.92 meters (400 feet). Average heights for above-ground tanks are 13.72 meters (45 feet). Tanks may be in individual dike areas or may have multiple tanks within one dike. Dikes, or bunds as they are also referred to are physical barriers or dividers used to prevent the spread of tank contents in the event of a tank overflow or tank rupture.

There are several types of above ground atmospheric storage tanks. For this article we concentrate on the following types, typically found at bulk storage facilities:

- Cone roof and dome roof tanks
- Open top floating roof tanks
- Covered floating roof tanks including geodesic domes
- Vertical low-pressure storage tanks
- Horizontal Storage Tanks

The types of tanks used to store flammable and combustible products are generally determined by the physical characteristics of the product being stored, however, this may not always be the case. There have been instances where products have been stored in tanks not intended for the particular product.

Cone or Dome Roof Tanks

Cone roof and dome roof tanks are similar with the difference being the shape of the roof. Cone roofs have a cone shape, but depending on the slope of the roof, the cone shape may not be evident from the ground. These tanks will have a vapor space between the product surface and the underside of the roof. If this vapor space is in the explosive range and an ignition source is introduced, an explosion will occur. Generally, these tanks are used to store liquids with a flashpoint of 37.8 degrees C (100 degrees F) or higher, however, there have been instances where liquids with lower flashpoints have been stored in such tanks and the vapor space has ignited.

These tanks are equipped with a pressure/vacuum relief device to allow the internal pressure to nearly equal the external atmospheric pressure. They may also have open vents. These devices allow the tank to “breathe” during loading, unloading, and extreme changes in temperature resulting in a change of the pressure in the vapor space. Cone and dome roof tanks will also have a weak roof-to-shell seam. In the event of an incident such as internal overpressure from an explosion or similar incident, the roof will separate from the vertical shell, thus preventing the failure of the bottom seams and a resultant tank rocketing

event. Flame arrestors may also be found to prevent the introduction of a spark to the vapor space through vents or pressure/vacuum relief devices.

Open Top (External) Floating Roof Tanks

Open top floating roof tanks are vertical steel cylinders with a roof that floats on the surface of the liquid in the tank but it is open to the atmosphere above. The roof moves up and down inside the tank shell with the product. This floating roof’s advantage is that there is no vapor space between the liquid and the roof as in a cone roof tank. These roofs float on pontoons or have a double-deck for floatation on the liquid’s surface.

These tanks can be distinguished from a cone roof tank by the presence of a wind girder that rings the top of the tank. The wind girder acts as a stiffening ring for the top of the tank, giving it additional structural support. Between the shell of the tank and the roof edge, a rim seal will be provided to prevent vapors from escaping to the outer air. The rim seal area is considered to be the space between the tank shell wall and the floating roof edge. This distance may be 0.30 meters to 1.21 meters (1 foot to 4 feet). Open top floating roofs generally carry low flash point liquids which have high vapor pressures.

While the roofs of these tanks are designed for carrying a specific live load plus additional loads created by rain and snow, they can fail if the load exceeds the designed limits. To prevent the excessive load, the roofs are designed with a drainage system to remove normal rain water from the roof to the ground where it can be collected

inside the dike area. In the event the drain system fails, or is overwhelmed by severe weather, the load can partially or fully sink the roof. When this happens the product is exposed to the atmosphere and vapors are released, subjecting them to possible ignition.

Covered (Internal) Floating Roof Tanks

These tanks exhibit the same basic construction features as the open top floating roof tanks but with the added feature of a fixed roof at the top of the tank. The fixed roof may be self supporting or may have vertical supports within the tank. These tanks also have a rim seal to prevent the escape of vapors from the liquid. The fixed roofs of these tanks are freely vented with the expectation that any vapors in the space above the floating roof will be below the flammable limit.

Covered floating roof tanks have distinguishing “eyebrow” vents at the top of the tank shell. These vents allow air to escape and enter the inside space between the fixed roof and the internal floating roof as it moves up and down inside the tank shell.

Domed External Floating Roofs

Domed external floating roof tanks are similar to covered floating roof tanks but instead of a steel roof, a much lighter roof structure is installed on an existing open top floating roof tank. These roofs are often referred to as geodesic dome tanks. The dome serves to provide a barrier to the wind and rain and may also provide environmental control with respect to fugitive emissions.

▼ Cone Roof Tanks – note the difference in roof shapes.



▼ Open Top Floating Roof Tank – note the presence of the wind girder just under the open top.



▼ Covered Floating Roof Tank – note the ‘eyebrow’ vents near the tank top.





▲ Domed External Floating Roof Tank next to Vertical Low Pressure Tank.

Vertical Low Pressure Storage Tanks

These tanks have relatively simple features. They are cylindrically shaped with a top and bottom. They will have some form of pressure/vacuum device. These tanks are generally smaller than cone roof tanks and generally used in process areas or specialty storage areas.

Horizontal Storage Tanks

Above ground horizontal storage tanks are normally smaller capacities, 151,400 liters (40,000 gallons) or less and are used primarily for storing flammable and combustible liquids.

Locations of Storage Tanks

The above-mentioned storage tanks can be found at many locations within fire districts. Locations that are most common are refineries, petro-chemical facilities, bulk storage plants, airports and marine terminals. This list is not all inclusive and many smaller facilities may have storage of flammable and combustible liquids. This series of articles focuses on larger facilities where the number and spacing of tanks, or the volume of the tanks creates a severe fire hazard.

Too many times these facilities with their tanks become just "part of the landscape" within our districts. As mentioned previously the fire service tends to focus on our bread and butter operations, and ignore the low frequency events. It is imperative that we notice these facilities, pre-plan them, and learn as much as we can about the facility, product, processes, and the fire protection or lack thereof in a facility.

Fire Hazards

The following are some of the hazards associated with the various types of storage tanks:

Fixed (Cone Roof) Tanks

- Vent fire
- Overfill ground fire
- Unobstructed/obstructed full surface fire

Open Floating Roof Tanks

- Rim seal fire
- Overfill ground fire
- Unobstructed/obstructed full surface fire

Internal (Covered) Floating Roof Tanks

- Vent fire
- Overfill ground fire
- Obstructed rim seal fire
- Obstructed full surface fire

Domed External Floating Roof Tanks

- Vent fire
- Overfill ground fire
- Obstructed rim seal fire
- Obstructed full surface fire

Vertical Low Pressure Tanks

- Vent fire
- Overfill ground fire
- Obstructed full surface
- Tank explosion and failure preceded by ground fire
- Tank explosion and failure with resulting ground fire

Horizontal Tanks

- Vent fire
- Overfill ground fire
- Tank explosion and failure preceded by ground fire
- Tank explosion and failure with resulting ground fire

The above listings may occur alone or in combination with each other. For instance, you may have a full surface fire in a tank and at the same time have a ground fire in the dike area. Our next article will focus on the types of fires in depth and the fire protection methods available followed by a third article which will give firefighting strategies and tactics as well as pre-incident planning guidelines.

➡ For more information, go to www.worldsafeinternational.com

We help suppression system OEMs meet regulatory standards with superior electromagnetic solutions.

Call us with your challenge.

CUSTOM AND STANDARD COMPONENTS
ULTRA-FAST RESPONSE
HIGH DURABILITY
RESETTABLE
UL RECOGNIZED COMPONENT
CUSTOM CONFIGURATION
ACTIVE MONITORING
FULLY ENGAGED INSTALLATION DETECTION
COMPLIANT TO NFPA 2001, SEC. 4.3.4.1
15 YEAR LIFE SPAN
FLEXIBLE PACKAGING
AND MORE...



CALL OUR TEAM:
262-372-2165

ON THE WEB:
www.tlxtech.com



The only beam that basks in the sun!

Fireray® 3000 End-to-End
Optical Beam Smoke Detector

- Patented light cancellation technology cancels unwanted light
- Protects large spaces from 5-120 Metres
- Fewer false alarms and false readings
- Low installation costs



T +44 (0) 1462 444 740
E sales@ffeuk.com
W www.ffeuk.com

GIELLETM

INDUSTRIES

ENGINEERING / MANUFACTURING / INSTALLATION / MAINTENANCE

MARITIME - OIL&GAS - DEFENSE - AVIATION - INDUSTRIAL - CIVIL APPS



Door Integrity Test
(door fan test)



Halon banking



Co₂ System



HFC-125 / HFC-23
Halotron



Gielle Industries - Via Ferri Rocco, 32 - 70022 Altamura (Ba), Italy
www.gielle.it - info@gielle.it - tel. +39.080.311.8998 Fax +39.080.310.1309



GIELLE
ANNIVERSARY
1965-2015

Follow us on:

facebook

twitter

skype

You Tube
Broadcast Yourself™

Designing for Fire Safety – New Wiring Regulations

We are now past the 1st July 2015 deadline for installers being compliant with a new wiring regulation in the UK to secure cables of all categories in escape routes by non-combustible means. The problem has been that many types of wiring system have fallen from walls and ceilings at the early stages of a fire leaving cables hanging. These cables have become entangled around the firefighters' breathing apparatus and/or uniform leaving them trapped and running out of air. This directly caused the deaths of eight firefighters in the UK between 2005 and 2010.



Steve Riszko

Steve Riszko is a product designer and developer with a reputation for pragmatic yet simple solutions to engineering challenges on some landmark projects in the UK and beyond. He ran the largest steel fire door company in the UK for 5 years where he pushed R&D hard – particularly for a 2.4M x2.4M 240 minute door to meet the plant replacement programme at London Underground which is still being used today.

The evidence from these tragic events helped to drive this change in legislation.

Regulation 521.11 was first published by the Institution of Engineering and Technology (IET) in January 2015 in BS7671:2008 A3. It states in Chapter 52 (Selection and Erection of Wiring Systems) on page 127 that “Wiring systems in escape routes shall be supported in such a way that they will not be liable to premature collapse in the event of fire.”

In Note 1, there is particular reference to failure of non-metallic trunking leading to cables hanging across access/egress routes hindering evacuation/fire-fighting activities.

▼ Hanging cables within the corridors of Shirley Towers following the fatal fire in 2010.

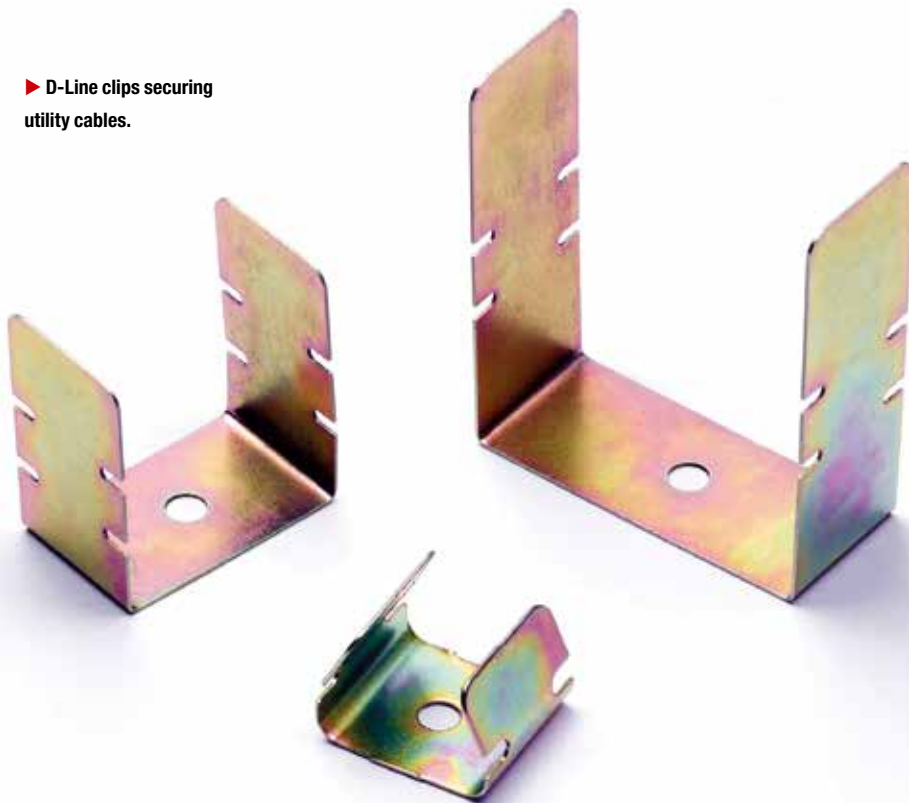
In Note 2 it specifically states this precludes the use of non-metallic clips, cable ties or trunking as the sole means of support. For example, where a non-metallic cable trunking is used, a suitable fire-resistant means of support/retention must be provided to prevent cables falling out in the event of a fire.

Many contractors, large and small were ready to meet this new requirement when it came in and had already adopted the use of fire-resistant cable clips in May and June 2015 on contracts that were going to be certified after the deadline date.

However, there still seems to be some uncertainty within the contracting community as to exactly what is expected of them to ensure that completed installations are fully compliant. This is particularly so on larger and more complex installations such as airports,



► D-Line clips securing utility cables.



ferry terminals, shopping centres, hospitals, schools, colleges, universities and historic buildings. They are now looking for guidance and confidence from the electrical design engineers and specifiers in the form of specific product recommendations so that installations are fully compliant and safe.

D-Line (Europe) Limited are the only company that have launched and provide a range of fully tested and certified fire-resistant clips to meet this demand. The clips were tested by Exova Warrington Fire,

confirming compliance to BS5839 part 1 section 26.2e – resistance to fire with mechanical shock and resistance to fire with mechanical shock and water spray – both for 120 minutes. The tests confirmed that Safe-D clips, when containing Enhanced Fire Performance 1.5mm 2 core cables, and subjected to 930°C (+40 -0°C) for 120 minutes at a voltage of 500V rms, enabled the cables to maintain circuit integrity – a key requirement for essential wiring systems. This is the highest requirement any cable type is ever liable to need, thus more than sufficient for all other cable categories.

D-Line has closely monitored

contractor reactions in the market place since the launch of its larger clip sizes in May 2015 (the smallest clip, the Safe-D30 has been available since 2006!). In the main, 2 questions emerge more often than any others.

When and where do I have to use these clips?

Regulation 521.11 requires cables of all categories to be retained by non-combustible means in escape routes. (An escape route is a route designated for escape to a place of safety in the event of an emergency. These may include not only defined routes such as corridors, stairways and hallways, but also open areas through which escaping persons might reasonably be expected to need to pass on their way to a place of safety.)

Designers and specifiers now need to start telling contractors how they expect them to do this.

PVC plastic trunking used alone to carry cable in these areas is now specifically excluded – however, there is a way to make it compliant. The Safe-D clip range from D-Line works equally well either fixed within proprietary plastic trunking or fixed direct to substrate. So, the first question is whether or not you need to use trunking at all. In back of house areas such as corridors and ceiling voids for example, cables can easily be retained inside Safe-D clips alone – this saves on cost and even time since wiring changes within trunking will take longer even if you just consider taking lids on and off!

In front of house areas where appearance matters more, then Safe-D clips fit snugly inside all PVC plastic trunking from

▼ D-Line clips securing fire rated and utility cabling.



Images courtesy of D-Line



Image courtesy of D-Line

sizes 2 to 8 inclusive. Fixing time takes no more than before since the trunking is fixed back to the wall by fixing through the clip holes, thus all that needs to be factored in by the estimator is the cost of clips per metre. Fixing intervals are determined by the cable manufacturers' recommendations and/or common sense.

Surprisingly, there are a number of products and proposed 'retention solutions' out on the market that are untried, untested, non-certified and not even cost effective. Some are actually non-compliant as they infringe other design criteria – most specifically 522.8.11 – because they have very sharp edges liable to damage cable and injure installers! Why isn't this usage being stopped? They are being used because designers and specifiers are not listing certified products in their specification sheets and therefore contractors are just doing what they think is right – so is this correct given that we are talking about life safety issues here? Shouldn't best practice be application of certified, engineered fire safety solutions every time wherever and whenever it is possible?

Simply listing properly tested and certified products eliminates all doubt. This practice is followed in countless other aspects of electrical installations and beyond – so let's start the practice here.

How do I fix them?

Passive fire protection products play a vital role in protecting lives and property in the event of a fire and the importance

of correct installation is often seldom considered.

It seems obvious, but when fixing a fire-resistant cable clip, isn't it only sensible to also fix them by non-combustible means? The absolute best way to fix the Safe-D clips is with masonry screws. They are simple, relatively inexpensive products with fixing load capacities way above what is needed in this application. Many of these screws will even self-drill into softer substrates if the flutes are wide and sharp enough. Harder substrates may need a small 4mm diameter pilot hole to get them started.

For those installers on larger contracts involving thousands of fixings, a better way again may be to use gas-fired nailing systems and firing the nail straight through the clip itself – consult with a fixing specialist for this on best and safest practice.

Safe-D clips have been met by many sources within the electrical wholesale and contracting marketplaces with particularly positive comments. Their unique and patented design allows the strong yet pliable 20mm wide tabs to be folded over neatly to safely retain all cable types. The installer can select the fold point appropriate for the number and types of cables being fixed by choosing from a selection of cut-outs at 10mm intervals along the sides of the larger clips in the range. The smallest clip only has one fold point because it is designed to only hold one or two cables. The selection of sizes came about by researching and measuring the internal widths of many

types of PVC trunking to find the optimum sizes to use on the base of each clip. Consideration was also given to how the lids were fitted.

The designer used his imagination and initiative to create a range of only 3 sizes of product that, when fixed correctly, meet the requirements of this legislation when used within any and all of the proprietary PVC trunking systems on the market in sizes from 2 to 8. Its simplicity and value was so high that customers identified it as a quality, value for money product and immediately started buying it when brought to the market. The proof of this is that it sold 212% of the annual volume of an earlier form of the product in the first 8 weeks after launch – that's over 2,000 per hour!

Further affirmation of its early success and acceptance in the market has come from the invitations to submit the product for 3 categories in this year's Electrical Industry Awards (most particularly for innovation) as well as 'Passive Fire Innovation Product of the year in the Security and Fire Excellence awards in November 2015.

D-Line (Europe) Limited are now actively looking for medium to large scale projects where Safe-D clips could be used to provide an efficient and cost-effective contribution to cable retention. If you are working on such a project and are happy to be part of a case study where we both share the resulting positive PR then please get in touch.



For more information, go to
www.d-line-it.co.uk

GLOBAL FIRESTOP SOLUTIONS

FOR AN EVOLVING WORLD

STI OFFICES:

North America • Latin America • Europe
Middle East • China • South East Asia • India

OTHER
NOTABLE
PROJECTS

THE MOST
UL® Firestop Systems

STI - 1,300+

TOP OF WALL - SPEEDFLEX®

**Specified
Technologies
Inc.**
THE FIRESTOP AUTHORITY

An ISO9001 Company



Celebrating 25 Years of Firestop Excellence



CLEVELAND CLINIC, USA
A TOP MEDICAL CENTER IN THE WORLD



KAUST - JEDDAH, KSA
INSPIRING A NEW AGE OF SCIENTIFIC ACHIEVEMENT



CERN - SWITZERLAND
WORLD'S LARGEST PARTICLE PHYSICS LABORATORY

- Stanford University Medical Center - USA
- Mayo Clinic - USA
- Hôpitaux Universitaires de Genève

- Al Dar Headquarters Abu Dhabi
- Rolex - Switzerland
- Pentagon - USA

- Charles de Gaulle Airport - Paris
- Singtel Datacenter - Singapore
- Substations - Qatar

- AL Ain University - UAE
- Harvard University - USA
- Princeton University - USA

At STI, we are committed to delivering the most comprehensive line of innovative and reliable firestop solutions across a broad range of segments and industries worldwide. With best-in-class service and support, we are the preferred choice of specialists. Contact us today to experience the STI difference.

www.stifirestop.com

& FIRESTOP SPRAY



CABLE TRAY - FIRESTOP MORTAR & PILLOWS



PLASTIC PIPE - FIRESTOP SEALANT



DATA CABLES - EZ-PATH®



Enabling safe and reliable offshore LNG transfer operations

Moving liquefied natural gas (LNG) production offshore certainly presents its challenges for the offshore oil and gas industry, particularly when it comes to the design and construction of a floating offshore gas liquefaction plant (FLNG). This is because FLNG facilities need to maintain the utmost levels of safety and give increased flexibility to LNG production while withstanding the effects of winds, waves and currents in the open seas.



Vincent Lagarrigue

However, with prospective new FLNG locations moving away from 'mild' areas to sites where sea states, wind and currents can be much more severe, is standard equipment enough? Where conditions are much more demanding, conventional marine loading arms will simply not suffice, as they can result in the shut-down of the liquefaction plant in bad weather conditions. Vincent Lagarrigue, Marketing and Project Manager from Trelleborg Industrial Solutions explains why tandem offloading solutions, which rely on the use of flexible hoses are a viable alternative for the industry – not only limiting downtime, but also improving safety.

Demanding Configurations

Many solutions which reduce the effect of motion and weather have been considered for FLNG transfer. Primarily, traditional LNG loading arms have been adapted to enable LNG ship-to-ship transfers in open water through side-by-side configuration. While loading arms can handle both

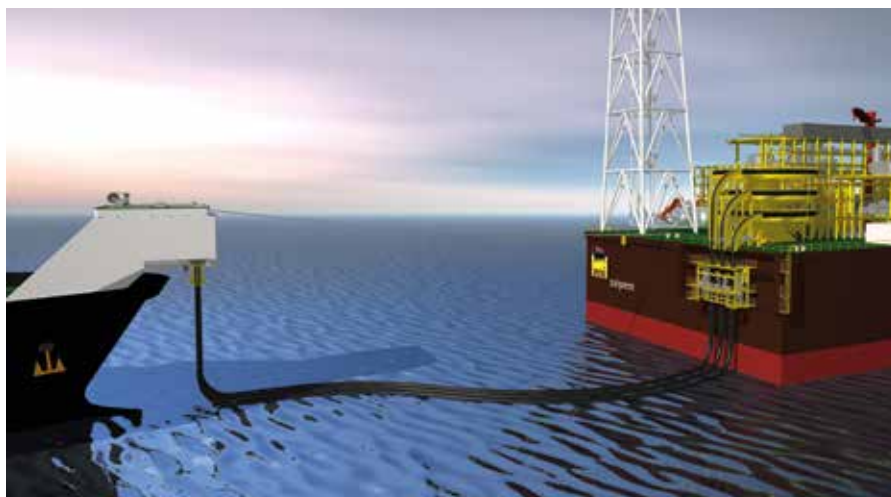
liquids and gases, environmental constraints such as tide and wind conditions as well as earthquake tolerances, can have a significant effect on performance; compared to hoses, loading arms lack flexibility.

Tandem offloading, where vessels line up stern to bow, would allow vessels to keep more distance between them (328 feet / 100 meters distance between FLNG and LNG carriers or more) and cope more easily with greater wave heights. This significantly limits the risk of collision between the two vessels, enhancing safety, but also greatly simplifying naval operations in approach, berthing and residence.

A Question of Safety

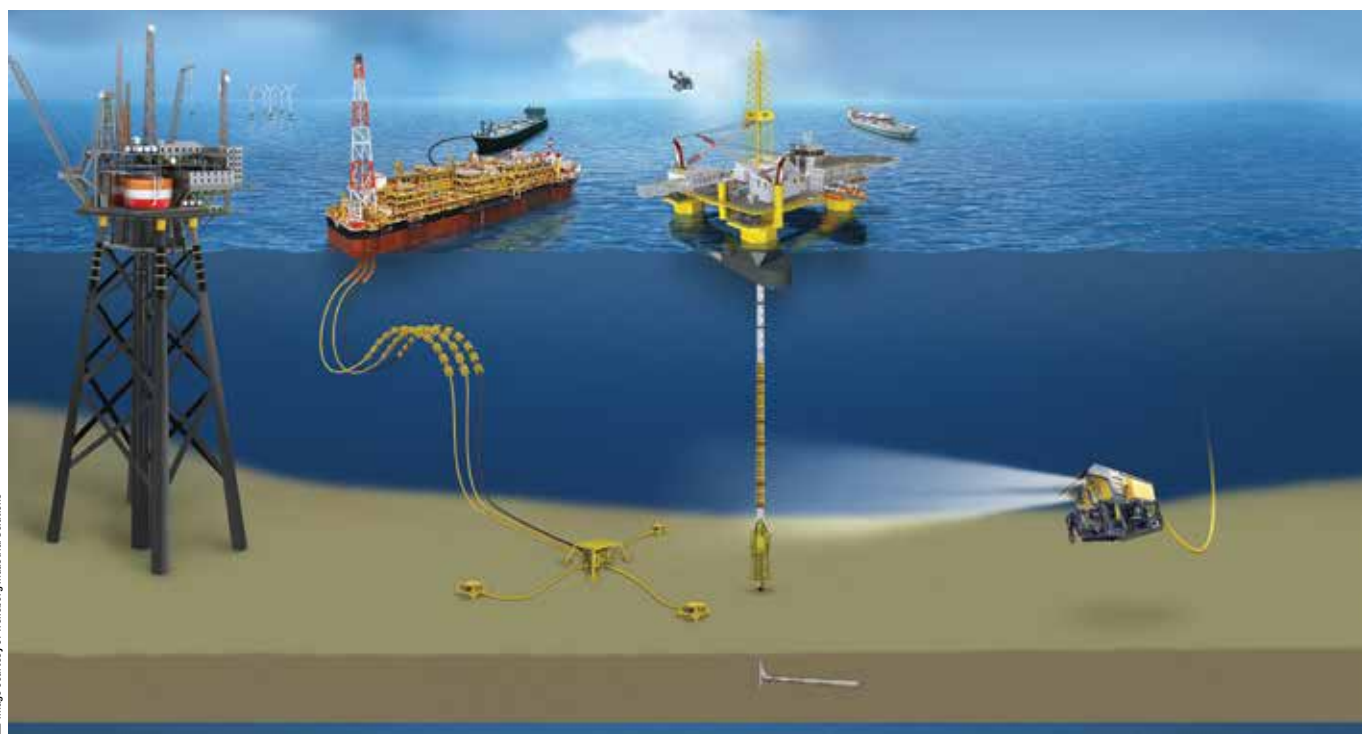
The main objective of tandem offloading systems is to be able to transfer LNG at a similar flow rate compared to traditional ship-to-shore offloading operations

▼ Oil and gas operators will be able to connect the system at wave heights of up to 4 meters and to offload with 4.5 meter waves.



Vincent Lagarrigue is Marketing Manager with Trelleborg Industrial Solutions.

Image courtesy of Trelleborg Industrial Solutions



performed along jetties equipped with LNG loading arms, and to enable this transfer in difficult environmental conditions.

Systems and their associated floating hoses, must be designed to operate in sea states with significant wave heights of up to 13 feet / 4 meters at connection and 15 feet / 4.5 meters during transfer and disconnection, even with non collinear wind or current directions. These figures guarantee very good offloading availability in almost any location in the world.

Safety requirements have put the design of the tandem offloading system through a number of considerations, all aimed at limiting risk of personnel exposure and damage to equipment and facilities. One example is the use of floating hoses in tandem configuration, which enables the LNG carrier (LNGC) to be almost as far away from the FLNG as requested by the operator; an arrangement which brings a clear safety benefit compared to side-by-side loading or tandem loading with aerial hoses. In addition, in exposed conditions the less time the LNGC stays connected, the safer the transfer operation will be. It also improves offloading availability; degradation in weather conditions is less likely to occur if the offloading window is shortened.

Innovative Solutions

So, in the absence of any mature tandem offloading solutions using floating hoses, leading manufacturers have initiated the

development of their own. For example, leading manufacturers Trelleborg and Saipem have teamed up to develop a new LNG tandem offloading system which utilizes three Cryoline LNG floating hoses, as well as a hose storage system, a connection head with a dedicated storage platform on the LNG terminal and bow loading platform on the LNG carrier.

However, to meet the challenging demands placed on these new tandem systems, this technology has been further enhanced, with new parameters being put forward for the development of these hoses. For example, the choice of a 20 inch / 50 cm inner diameter LNG hose was required as this enables operators to transfer LNG at least as fast as standard LNG loading arms on traditional jetties, i.e. up to 423,776 ft³/h / 12,000 m³/h.

The end result was an LNG floating hose based on a hose-in-hose concept that consists of a field-proven outer rubber marine hose with an inner LNG composite hose, which is already well established, in particular for use in LNG ship-to-ship transfer.

A Dedicated Design

This new floating cryogenic hose consists of an inner cryogenic hose, an outer protective hose, an efficient insulation layer and an integrated leak monitoring system. Composite LNG hoses have already proven their suitability for such an application as this technology has been

▲ This tandem arrangement enables safe and reliable transport of offshore natural gas.

validated through many full scale static and dynamic tests, and many offshore ship-to-ship LNG transfers.

Integrated Systems

The annular space between the inner and outer hose is filled with insulation materials which have excellent properties over the full range of temperatures (from ambient to cryogenic temperatures). As long as external environmental conditions are above +41 °F/ +5° C, the insulation layer is designed so that no ice will form on the outer cover of the cryogenic hose.

These materials have been designed to reduce heat loss within the structure, to protect the outer rubber-bonded hose from cryogenic temperatures and to ensure LNG hose buoyancy. In addition, an integrated leak monitoring system based on optical fiber technology for gas leak detection has been included in the design in the annular space between the inner and outer hoses.

Precise Design

A compact and specific connection system has been designed for the application. This new technology will typically consist of 39 feet / 12 meter long sections, which will be connected together – either onshore or offshore –



Image courtesy of Trelleborg Industrial Solutions

with threaded rods and nuts, in the same way as conventional flexible bonded hoses for oil applications.

A new concept of end fitting has also been developed in order to ensure load transfer and leak tightness, and to minimize heat loss within the offloading lines. The design of the connection system includes dedicated seals for cryogenic application which are used for static and dynamic applications, exhibit excellent sealing integrity in gas and fluid applications, and withstand rapid changes in temperature.

Developed using Finite Element Analysis (FEA), the end fittings allow for coupled thermal and mechanical loads at the very first steps of the design process. In a second step, the calculations have been validated through full scale tests performed on a dedicated test bench so as to validate the design of the connection system, to demonstrate the tightness of the connection design at room and cryogenic temperatures, and to endorse the choice of the cryogenic sealing technology. For example, cyclic compression loads up to 200 tons have been applied on a full scale connection, highlighting a safety factor of 10 in service conditions on the key components.

Qualifying Technology

The main challenge for this LNG tandem offloading system qualification was to qualify the floating hose according to

the EN1474-2 standard, which requires a complete set of full-scale tests.

Based on flexible bonded hose technology, which is suitable as an external hose for the floating LNG hose-in-hose concept, the cryogenic hose development program has been focused at an early stage on key elements such as composite hose suitable for transfer in cryogenic conditions and dedicated end fittings for such application. Subsequently, those elements have to be integrated within the flexible bonded hose in order to design a homogeneous, safe and reliable cryogenic hose able to meet the operators' offloading requirements.

Several reduced scale prototypes have been manufactured and tested since 2009 at ambient and cryogenic conditions, in order to validate theories and demonstrate feasibilities. Expected for completion in 2015, additional 20 inch / 50 cm Cryoline LNG prototypes will be tested within the Qualification Test Program in both static and dynamic conditions to demonstrate the suitability of a flexible hose for LNG transfer applications including mechanical, thermal and flow tests. In particular, a fatigue test will be completed on full scale prototypes – including a complete connection system – to prove that the Cryoline LNG withstands recurrent dynamic loads for long service life.

▲ LNG transfer can be made safer with less downtime by using flexible hose in a tandem offloading arrangement.

Typically, the qualification test program includes a cryogenic bending cyclic fatigue test that will reproduce the dynamic load conditions to which the cryogenic hose will be submitted in service conditions. More than 20 tests will be performed, either destructive or non-destructive, at ambient and cryogenic temperature in order to qualify the technology, under survey of Bureau Veritas.

Conclusion

Derived from existing and proven technologies, the latest development in cryogenic LNG floating hoses will become a key component in offloading systems for future offshore FLNG projects. By enabling offshore transfer of LNG in tandem configuration, the cryogenic floating hose will pioneer a step change in the safety of this critical operation. This innovative system will also allow FLNG projects to be considered for harsher conditions, without excessive downtime due to offloading system availability, and with significantly reduced risk.



For more information, go to
www.trelleborg.com

Linear Heat Detection Cable

IN ANALOGUE & DIGITAL TECHNOLOGIES



Patol's Linear Heat Detection Cable (LHDC) is designed to provide early detection of fire and overheating.

And it does it in circumstances where other forms of detection would simply not be viable - either through their

prohibitive costs or their inability to sustain environmental requirements.

When other detection systems just won't do

- Can be installed in extensive lengths - of up to 10 kilometres
- Reveals any hot spot occurring on even smallest section of overall length
- A viable alternative to point heat detectors in conventional installations
- Can even be installed in very close proximity to monitored hazards
- Minimal requirement for maintenance is also especially advantageous in areas of restricted access or those that pose a risk to health and safety
- 'Distance Location' monitoring and display - to the point of activation

tel: +44 (0)1189 701 701
visit: www.patol.co.uk
email: info@patol.uk.com

Providing protection in tunnels, car parks...



...airport pods and power stations

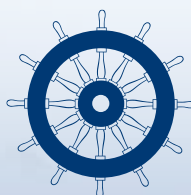
PATOL

FIRE DETECTION SOLUTIONS



NEW Marine Approved Fire Control Panels

- Available from 2 - 12 zones
- Muster alarm zone(s)
- Simple colour coded buttons
- False alarm management modes
- Programmable inputs & outputs
- Fully functional repeater panels (8-12 zone)



MED Ref: 0832/15



www.haes-systems.com



Tel: +44 (0) 1895 422066
Fax: +44 (0) 1895 420603
e: enquiries@haes-systems.co.uk

The ultimate smoke detector.



The ultimate...

- Detection — very early warning with increased sample hole coverage and reduced nuisance alarms
- Future-proof platform, with expandable hardware modules for additional capabilities & downloadable software analytics for more effective response
- Connectivity with WiFi, Ethernet, USB, iVESDA mobile apps & more
- Backward compatibility, both physically and electronically
- Protection of your investment, with increased longevity and lower total-cost of ownership



Stay protected and connected
with the iVESDA mobile application
for iOS and Android devices

VESDA® 
 **xtralis™**

**You've never seen
anything better.
You never will.**

Learn more: www.xtralis.com/ultimate

Fire Wrap Systems as Alternative to Fire Rated Shaft Construction

Life safety ducts such as those supplying fresh pressurization air to an exit stairwell or those designed to extract smoke from a fire area in a building are just a few amongst the many air distribution system (ADS) duct types required by code to be protected from fire in a commercial building. As building codes and fire test standards have evolved over the years, the presence and acceptance of flexible fire rated duct wrap systems as alternative to gypsum shaft enclosures to provide the required hourly duration of protection has immensely increased.



Mike Kerrison

Mike Kerrison is the Fire Protection Product Manager at Unifrax I LLC with over 12 years' experience in various engineering and marketing positions supporting the passive Fire Protection Business. In addition to running full scale fire testing programs, during his time at Unifrax Mike has conducted numerous educational seminars for architectural firms, engineering firms, state and local code authorities, as well as insulation and mechanical contracting companies.

Many situations present themselves in a commercial building that create an advantage for using flexible duct wrap systems as an alternative to gypsum shaft assemblies to provide the necessary fire resistance rating. A few of these situations include:

- Lack of the necessary space required to build a properly constructed code compliant gypsum shaft
- Complex duct configurations
- Other construction items such as other ducts, pipes, equipment, and the support structures for such, creating additional space constraints

▼ Duct with complex geometry, close to other service items.

- "Cross-over" floor ducts that come out of one fire rated gypsum shaft, run horizontal to the other side of the building, and re-enter another gypsum shaft
- Ducts that pass through fire rated stairwells and exit ways

What is a flexible fire wrap system?

They are referred to as "systems", since the flexible wrap products are fire tested in conjunction with the duct to be protected. Thus they are not fire rated wrap "products", rather the product and duct tested together become the fire resistance-rated duct "system". In contrast, a gypsum shaft assembly is not actually tested as four walls enclosing the duct, but rather as an individual shaftwall, which is clearly not a duct "system".



Image courtesy of Unifrax



▲ Duct passing through exit stairwell.

Flexible fire wrap products typically consist of high temperature (operating temperatures upwards of 2000°F), low bio persistence fiber blankets completely encapsulated in scrim reinforced foil. These fiber blankets typically do not utilize organic binders, rather they are manufactured with a needling process intertwining the fibers creating a completely noncombustible product form. The scrim reinforced foil encapsulation adds handling strength for installation,

▼ Duct with insufficient space to construct proper code compliant shaft.



helps the product resist moisture, as well as providing a location to print the product identification and certification information for use by Code Officials to properly identify the product installed.

Duct types

As previously mentioned, there are many duct types that are required by the building codes to be protected from fire. Among the list of those duct types include:

- Stairwell and vestibule pressurization
- Smoke control
- Supply/return
- Commercial dryer exhaust
- Hazardous and laboratory exhaust
- Bathroom and toilet exhaust

Advantages of using flexible wrap systems

- Thin profile uses less space than shaft construction allowing more habitable square footage in a given building space and solves space constraint issues
- Easily contours to accommodate complex duct configurations
- Lightweight material (typically 6 lbs/ft³ density) allows for easy handling
- Installed cost lower than gypsum shaft construction
- Listed and Labeled systems fire tested as one complete system with the duct

Approval process

Since the International Building Code (IBC®) published by the International Code Council, enforced throughout the United States, does not define requirements for shaft alternatives for ADS ducts with the exception of commercial kitchen grease ducts (ASTM E2336 is used for grease ducts, listed in the International Mechanical Code – IMC®), section 104.11 of the IBC is utilized for alternate systems approval. Section 104.11 titled “Alternative materials, design and methods of construction and equipment” states: “An alternative material, design or method of construction shall be approved where the building official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety.” Further to this, section 703.3 of the IBC titled “Alternative methods for determining fire resistance” provides additional information for alternative methods for fire resistance rated assemblies as suggested by the title.

In general, approval for use is achieved by providing documentation for tested, Listed and Labeled systems. The term “Listed and Labeled” systems refers to systems that are tested at, and Listed and Labeled by an IAS (International Accreditation Service) accredited testing organization. With this, the manufacturer abides to a “Follow up Service” program in which the manufacturing facility is randomly visited by a laboratory representative to witness material production and verify the material is consistently being produced within the

specification of that fire tested. Intertek Testing Services and Underwriters Laboratories are both examples of IAS accredited Laboratories.

For years, fire resistance-rated duct systems utilizing flexible fire wrap products were approved on a case by case basis for projects, upon special request. As the industry, education, and awareness of said systems has evolved over the years, it has moved in the direction of accepted practice as opposed to case by case. These systems are being specified by Architects and Engineers alike as an alternative to gypsum shaft assemblies and widely accepted throughout North America by Code Officials.

Performance criteria

Section 703.3 of the IBC as previously referenced states “The application of any of the alternative methods listed in this section shall be based on the fire exposure and acceptance criteria specified in ASTM E119 or UL 263.” Due to the lack of a fire test standard that addresses ADS duct performance in a fire scenario (other than grease duct systems) utilizing ASTM E119 time-temperature fire exposure, ISO 6944-1985 Fire Resistance Tests – Ventilation Ducts (BS 476: Part 24) is the recognized standard used for testing flexible fire wrap ADS duct systems. This fire test standard utilizes the ISO 834 time-temperature fire exposure curve. In 1987, a study was conducted by The American Society for Testing and Materials (ASTM) and the National Research Council Canada (NRCC) comparing the ASTM E119 and ISO 834 time-temperature fire exposure conditions. The results were compiled in ASTM’s Journal of Testing and Evaluation in a publication titled “Comparison of Severity of Exposure in ASTM E119 and ISO 834 Fire Resistance Tests”. The results showed that for fire tests in duration upwards of 1.5 hours, the exposure differences between the two are negligible, thus providing technical justification for acceptance of ISO 6944-1985 tested systems.

ISO 6944-1985 uses three specific performance criteria for reporting the fire resistance rating of the duct system. The rating (tested in both vertical and horizontal orientations) is the duration in minutes when exposed to ISO 834 time-temperature fire exposure conditions until failure occurs per one or more of the following:



Image courtesy of Unifrax

- **Stability** – When the duct collapses in such a manner it no longer fulfills its intended function
- **Insulation** – Temperature rise limit on the duct wrap surface outside the furnace exceeds pass/fail
- **Integrity** – Passage of flames or hot gases enough to create flaming on the unexposed side

In order to be considered as a shaft alternative per the above criteria, all three performance criteria must be achieved to equal or greater hourly duration than that of the required shaft enclosure. The IBC section 707 requires shafts that penetrate four stories or higher to be two hour fire resistance rated, with three stories or less being one hour.

In addition to that, systems are tested, Listed and Labeled per ASTM E814 – “Standard Test Method for Fire Tests of Penetration Firestop Systems”. Testing to this standard demonstrates that for locations where the fire resistive duct system passes through fire resistance rated walls and floors, it maintains the fire resistance rating of the wall or floor penetrated by selecting the system with equal hourly ratings of that being penetrated.

Two hourly ratings are established and reported:

- **F Rating** – No flaming on the unexposed surface
- **T Rating** – Temperature rise criteria on the surface of the penetrating item remains below pass/fail temperatures (325 °F over ambient)

▲ **Duct above drop ceiling lacking space for proper shaft construction.**

New fire test standard – ASTM E2816

Due to the code structure and requirements for ASTM E119 time-temperature fire exposure conditions within code Section 703.3 of the IBC, demand for development of a new standard to evaluate ADS duct systems (except grease ducts) per ASTM E119 criteria continued to increase. ASTM E2816 – “Standard Test Methods for Fire Resistive Metallic HVAC Duct Systems” was first published in 2009, the result of extensive industry input and a consensus based process. Over the following few years, the standard content was revised for clarity and “usability”.

This fire test standard utilizes ASTM E119 time-temperature fire exposure conditions to evaluate four separate full size duct configurations: horizontal-open, vertical-open, horizontal-closed, and vertical-closed, thus evaluating for fire “inside” and “outside” the duct scenarios. This standard also includes evaluation and reporting of the mechanical support systems for the duct as well as transition connections from vertical to horizontal duct configurations. In addition, this standard evaluates a number of attributes of the flexible fire wrap materials protecting the duct including the combustibility, flame spread and smoke generation, and durability properties. ASTM E814 testing of the through penetration firestop system as described above is also included within this standard.



Images courtesy of Unifrax

Grease duct systems paved the way

Section 506.3.11.2 of the International Mechanical Code (IMC) titled “Field-applied grease duct enclosure” states “Commercial kitchen grease ducts constructed in accordance with Section 506.3.1 shall be enclosed by field applied grease duct enclosure that is a listed and labeled material, system, product, or method of construction specifically evaluated for such purpose in accordance with ASTM E2336.” While flexible fire wrap systems have been used for grease ducts dating back to before the year 2000 and accepted as alternate systems, it wasn’t until the 2006 edition of the IMC when ASTM E2336 was written into the code. While initially listed as an exception to the shaft requirement it was later moved to its own section in 2009. Having the accepted fire test standard incorporated directly in the code eliminates the need for utilizing the Alternate Methods procedure described previously in this article. Prior to 2006 and the development of the ASTM test method, flexible fire wrap systems for grease ducts were accepted by documenting compliance with AC101 – “Acceptance Criteria for Grease Duct Enclosure Assemblies” and issuance of an Evaluation Report.

ICC-ES® Acceptance Criteria

ICC-ES (International Code Council Evaluation Service) as well as Underwriters Laboratories offer “Evaluation Reports” for technologies or solutions that the code language is not clear or alternative code compliant solutions are not clearly defined. ICC-ES

has “acceptance criteria for products and systems that are alternates to what is specified in the code, or that fall under code provisions that are not sufficiently clear for the issuance of an evaluation report. Acceptance criteria are developed by the ICC-ES technical staff in consultation with the report applicant and with input from interested parties; are usually the subject of open public hearings of the ICC-ES Evaluation Committee (made up entirely of Code Officials); and are approved by the Evaluation Committee after issues raised during the hearings are resolved.” These acceptance criteria are assigned a number preceded by “AC”.

Once compliance to the “AC” criteria is achieved, an Evaluation Report can be issued. The Evaluation Report details information about the “AC” criteria used for evaluation, the applicable sections of the code as well as tested system installation specifics. This tool aides Code Officials in properly identifying code compliant solutions not clearly defined by the code. AC101 as referenced previously, in conjunction with Evaluation Reports were used for flexible fire wrap systems for grease ducts to show code compliance prior to code inclusion.

AC179 – “Acceptance Criteria for Metallic HVAC Duct Enclosure Assemblies”

AC179 was revised in 2011 to include ASTM E2816 as the means for evaluating systems such as flexible wraps for ADS duct types (except grease ducts). As previously mentioned, there have been a few minor changes for clarity and

▲ Multiple ducts in close proximity to one another (left). Two ducts in close proximity to one another and surrounding service items (right).

“usability” to the E2816 standard since its origination. Manufacturers have now begun to test to this standard and Underwriters laboratories and Intertek Testing Services will be including these systems in their listing directories as means for evaluating ADS duct systems. In Addition to this, with AC179 in place, Evaluation Reports can now be obtained upon testing completion making the use of flexible fire wrap systems as alternative to gypsum shaft assemblies the easy, and technically sound choice for Design Professionals to specify, and Code Officials to approve.

Proven effectiveness

The proven effectiveness of this path to acceptance and later code inclusion for grease duct systems suggests the same evolution will take place for the other ADS duct systems discussed in this article. While tested, Listed and Labeled flexible ADS fire wrap systems today are widely accepted, this evolution will further expand the usage utilization of these systems and give Design Professionals and Code Officials a higher comfort level to specify and approve fire resistance rated duct assemblies as alternatives to fire rated shaft construction, providing greater opportunity for their benefits to be realized by the construction industry.



For more information, email
mkerrison@unifrax.com

FyreWrap® DPS Insulation just opened the door to improved dryer duct fire protection.



Recent NFPA statistics indicate significant injuries, loss of life and property damage due to clothes dryer fires in residential buildings. At the same time, code requirements for dryer exhaust ductwork in multi-family residences have been difficult to achieve in real-world conditions – until now.

Introducing new FyreWrap® DPS Insulation for dryer ducts and plenums.

FyreWrap® DPS Insulation is an innovative duct wrap that provides a safe and cost-effective means to achieve a 1-hour fire resistance-rated enclosure for routing dryer ductwork through rated wood construction. It utilizes a lightweight, high temperature, low bio persistence fiber blanket specifically designed, UL tested and classified for this

critical application. It also provides code compliant fire protection for combustible items such as plastic pipes in the plenum area. FyreWrap DPS Insulation features a ½", single layer design that is flexible and easy to cut, fabricate and wrap to fit tight spaces, providing time- and cost-savings on many projects.



More information on FyreWrap DPS and our complete line of FyreWrap products is available at www.arcat.com and www.unifrax.com or by calling 716-768-6500.

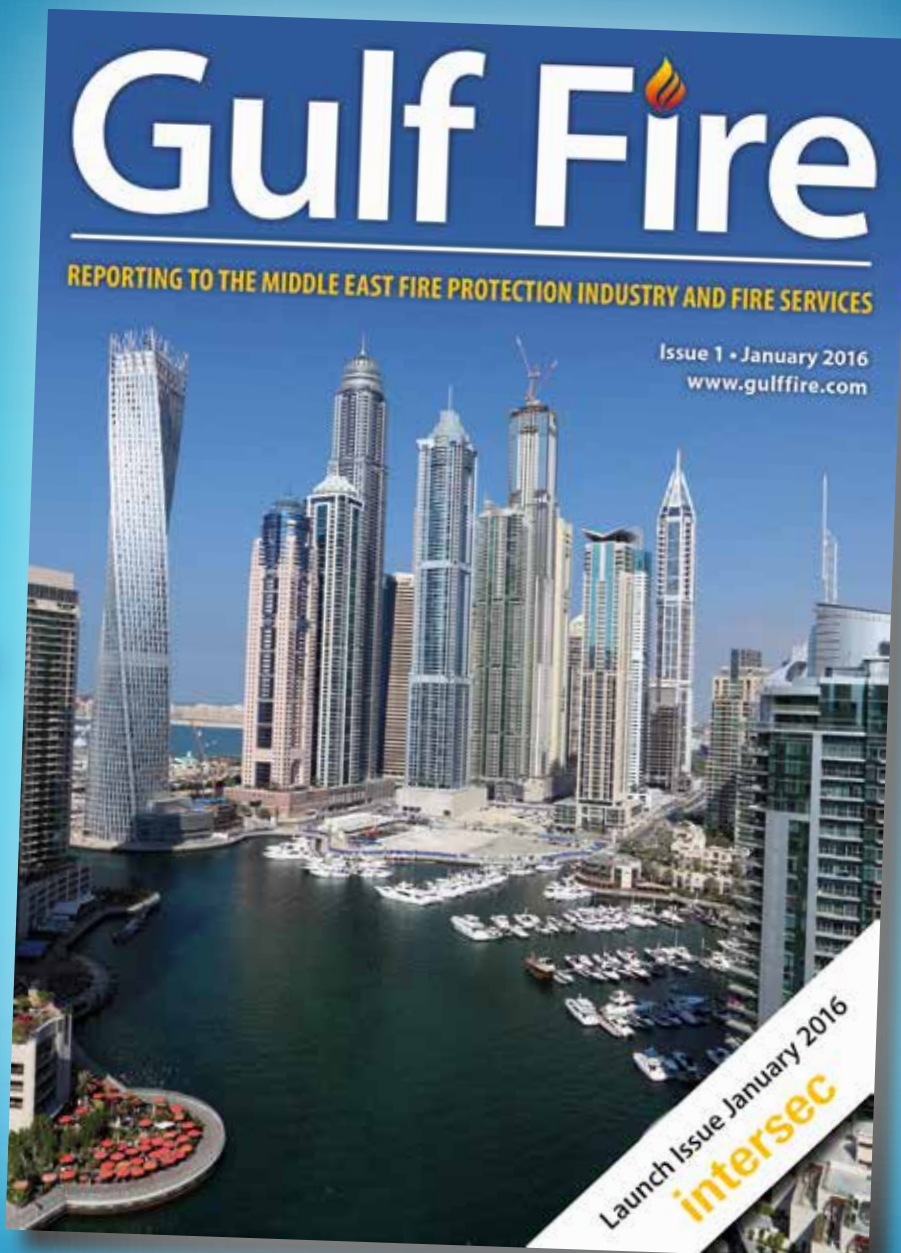
UNIFRAX
www.unifrax.com



**Introducing
the latest
title from**

MDM
PUBLISHING LTD
WORLDWIDE MEDIA

Gulf Fire Magazine is set to become the only quarterly journal specific to the Middle East fire market dedicated to both fire protection and firefighting, which will circulate to an initial readership of over 8,000 industry professionals. The editorial features will be written by industry experts and comprise a unique blend focussing on the latest technology, training methods and equipment as well as highlighting sector specific issues from around the region. Regular product and company profiles, events updates and news will make Gulf Fire Magazine the first choice read for fire protection and firefighting professionals.



- Bahrain
- Cyprus
- Egypt
- Iran
- Iraq
- Jordan
- Kuwait
- Lebanon
- Oman
- Palestine
- Qatar
- Saudi Arabia
- Syria
- Turkey
- United Arab Emirates
- Yemen

Register today for a **FREE** subscription to the quarterly print magazine which will be available in December 2015. You may also subscribe to our free monthly e-mail newswire.

MDM
PUBLISHING LTD
WORLDWIDE MEDIA

www.gulffire.com

Fire Protection in Britain's Heritage Buildings

Heritage buildings offer a unique challenge to the fire risk assessor and fire engineer. Historic buildings seldom have any significant fire engineering in them and are frequently used for a purpose completely different to their original intent. Often they are open to the public, which means we have to concentrate on means of escape. In this context we are going to look at fire alarms, signs and emergency lighting.



Graham Simons

In addition to the safety risks to staff and the visiting public there are also concerns over the often unique and irreplaceable nature of these buildings and the artefacts they contain. An example of this is the devastating fire at Clandon Park in April 2015. This 18th-century mansion in Surrey is a Grade 1 listed building that has been managed by the National Trust since 1956. A fire started in the basement of the building and quickly spread to the roof. Surrey Fire and Rescue Service attended with 16 fire engines and 80 personnel but despite this the house was severely damaged when the roof collapsed and most of the interior was destroyed. Only one room remains intact but fortunately no one was injured in the incident.

▼ Goldsmiths College,
University of London.

Fire Detection and Alarm

Throughout the UK fire safety law requires us to 'provide means for detecting fire and giving warning in case of fire'. Premises must be 'equipped with appropriate fire detectors and alarms' but legislation doesn't tell us more. The diligent fire risk assessor will most probably refer to BS 5839-1 and recommend a 'category' of system.

This Code of Practice takes a broad brush approach and doesn't give specific advice for heritage buildings. Neither the law nor the Codes of Practice say how fire detection and alarm systems can be installed and remain sensitive to the historic nature of these buildings. We clearly don't want red cables or conduit visible on lovely facades and wireless systems offer an obvious solution. Early criticisms citing problems with reliability and battery life do not apply to contemporary systems.



Image courtesy of FIA

Graham Simons is FIA
Technical Manager.



◀ Glasgow School of Art's Mackintosh building.

intensity'. As all escape routes require illumination, this could be very extensive, including corridors, stairs, immediately outside (final) exit doors and open areas where people may congregate.

It is worth bearing in mind that required emergency light levels have increased dramatically since the late 1990's. Regrettably, enforcers and installers were slow to realise this, which means that most emergency lighting systems in heritage building are lamentably poor. Considering the vast numbers of people visiting heritage buildings, some of whom may have mobility problems and/or poor eyesight, it is important that escape routes, doors, signs, and potential hazards, such as stairways, are clearly visible. For emergency lighting to be implemented sensitively and not spoil the heritage environment, it is best integrated into the normal lighting at a design stage. If this cannot be done there are many light fittings on the market to help. There are very small light fittings with remote batteries or decorative fittings made of metal and glass. Spotlights may be used for large open spaces such as cathedrals. These can be mounted remotely from the area to be lit and, being relatively small, hidden away among the wall decoration. These solutions do not make fittings invisible but would make them less obtrusive.

Signs

There are a variety of signs which could be fitted. The law says, 'emergency routes and exits must be indicated by signs'. It is crucial to determine where the escape routes are as not every final exit is necessarily an emergency exit. A sign should be placed at every designated final exit. Additional signs are then placed to lead people through the building to a place of relative safety and escape.

The design of the sign is governed by EU regulations, which require a green rectangle with white pictograms. There are two types you can use; British Standard and European Standard. The BS sign shows a figure running through an open door, a direction arrow, showing the direction of travel and supplementary text, saying 'Exit', 'Fire exit' or 'Emergency exit'. Note that the text is all lower case except the first character.

However, wireless systems are not invisible. Call points, by their nature, have to be clearly visible but there is no reason why detectors and alarm devices shouldn't be virtually invisible.

A point type smoke detector in the middle of a ceiling would not look out of place in a modern building but would be totally out of place in a heritage building, particularly one with ornate ceilings. Some companies are able to provide elaborate customisation of detectors with patterns and colour matching so that they will be more discrete and merge into the decor. Low profile virtual chamber smoke detectors also offer a more discrete solution.

Two other solutions spring to mind; aspirating detection and beam type smoke detection. With an aspirating system the detector can be remote from the protected area and connected to a sampling point by small diameter pipe. The sampling point can be a small hole concealed among the ceiling decoration, while the pipe can be run in floor or roof voids and the detector positioned where the public don't go. A beam type smoke detector consists of an infrared transmitter and a light sensor receiver. The sensor measures the light level from the transmitter. In some cases they are combined in a single unit with

just a reflector on the opposite wall. These have a proven track record in big open spaces. The transmitters and receivers are quite small and can often be concealed in galleries and decorative coving. Audible alarms (bells and sounders) are usually red or white but there are no rules which say they must be. Audible alarms can be provided in a variety of colours but just as importantly, care in placing them should make them unobtrusive, if not invisible.

When providing fire alarm signals it will also be necessary to consider that some members of the public may be deaf or hard of hearing. If the emergency evacuation procedure requires the use of visual alarm devices then they must be compliant to EN 54-23. However there are alternatives to fitting these throughout the building such as providing members of the public with tactile devices to alert them of a fire. Some parts of the building, such as a toilet, are probably less aesthetically sensitive while more likely for visitors to be left alone and so this may be a site requiring a visual alarm device.

Emergency Lighting

The law is quite clear about emergency lighting – 'emergency routes and exits requiring illumination must be provided with emergency lighting of adequate

AN EVOLUTION IN FIRE DETECTION STARTS NOW



SOTERIA[™]
DETECTION > DEFINED



To find out more, please visit the website
www.apollo-fire.co.uk/soteria





◀ Fire crews battle a fire at the Glasgow School of Art's Mackintosh building in May, 2014.

equipment should be easily accessible, simple to use and indicated by signs. This implies that every fire extinguisher should have a sign. This bates the question, if you can't see a big red extinguisher, how are you going to see the sign?

Operators of heritage buildings are often tempted to put extinguishers out of sight. Most people see extinguishers every day in workplaces and public buildings and, for the most part, develop a blind spot to them. If you're tempted to hide them, you must still indicate their location with signs. Suppliers often incorporate information about the extinguisher and its uses with the equipment sign. While this information is not mandatory, it is useful; it is far easier to read the sign on the wall than the information on the side of the extinguisher.

Furthermore, it is a legal requirement to provide information to employees and others about procedures to be followed in an emergency. The easiest way to do this is with, what is commonly referred to as, a 'Fire Action' notice. These are often placed near fire alarm call points, where they are readily accessible and visible. If you can find an alternative way of ensuring that the relevant people get the information, there is no legal reason for having the notices. One alternative may be to locate the notices in staff rest rooms and/or toilets, or provide the same information in staff handbooks and rehearse the procedures during staff training.

There are also 'hazard warning' and 'prohibition' signs that, along with other signs and notices, need to be visible, which probably means further emergency lighting. It is worth mentioning luminous and photoluminescent signs; they are not a substitute for emergency lighting – be wary of salespeople who say that they are.

The fire industry understands the sensitivity needed to preserve the aesthetics of historical buildings and has provided solutions compatible with these environments. Above all, it is most important that heritage premises, like any other commercial building, comply with UK fire safety law to protect the staff, visitors and structure itself from fire.

➡ For more information, go to www.fia.uk.com

The EU signs show a white rectangle representing a door, a figure, apparently running towards the door, and an arrow, pointing at the exit. Either design is acceptable but you should be consistent and only use one design throughout. Size is important; the bigger the viewing distance, the bigger the sign. Most suppliers can give good advice on this.

You have also probably seen what are known as 'mandatory' signs, which are blue circles with white symbols or text. The most common one says 'Fire door keep shut'. They are called 'mandatory' because they are giving a specific instruction, not for any legal reason. So, do you need them on every fire door? Broadly

speaking, it is a good idea because it provides a reminder to everyone to keep the door closed. If a door is aesthetically or historically very sensitive, it may be prudent not to stick a mandatory sign on it. This would be perfectly acceptable, providing you take reasonable measures to ensure the door is closed when not in use, such as staff training, written instructions and periodic inspections.

Fire safety equipment should be easily accessible, which means that signs are very often required. For example, fire alarm call points that are tucked away out of sight should have signs indicating where they are. Interestingly, the law says that any non-automatic fire-fighting

▶ Emergency lighting and signage.



STORAGE SOLUTIONS

Family owned business protecting life & property for over 90 years.

As warehousing solutions continue to develop, they need to cope with the demand for greater storage capacity. The Reliable Sprinkler Company leaves nothing to chance with its range of Storage Sprinklers. From In-Rack K5.6 Sprinklers through to the K25 ESFR (Early Supression Fast Response) and N252 EC (Extended Coverage) for CMSA & CMDA applications.

Reliable Has It Covered.

More Sprinklers available. Contact us now for details!



GL112 Upright



GL112 Pendent



N252EC



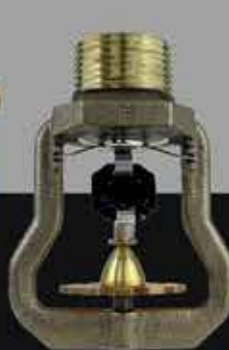
JL14/JL17 ESFR



N25 ESFR



J168 CMDA



HL22 ESFR

WHATEVER THE HAZARD, WE'VE GOT YOU COVERED



PRE-ENGINEERED SYSTEMS FOR SMALL SPACES:

- ✦ Detect and suppress fires automatically
- ✦ Reacts 10x faster than conventional systems
- ✦ Compatible with most extinguishing agents



Listings and approvals vary by agent and system type

ENGINEERED SYSTEMS FOR LARGE SPACES:

- ✦ High-pressure performance in a low pressure system
- ✦ Compatible with “clean” extinguishing agents
- ✦ Less piping and greater fill density

LEARN MORE AT: www.firetrace.com

FIRETRACE INTERNATIONAL - WORLD HEADQUARTERS

8435 N. 90th St., Suite 2, Scottsdale, AZ 85258, USA.

Tel: +1 480 607 1218 • Email: info@firetrace.com

FIRETRACE INTERNATIONAL LTD - EMEA OFFICE

Unit 11, IO Centre, Salbrook Road, Salfords, Surrey, RH1 5DY, UK.

Tel: +44 (0) 1293 780 390 • Email: info@firetrace.com

Voice Alarms add Reliability and Flexibility to Emergency Warnings

In the event of an emergency, audible and visual warning signals are the critical final link in an automatic detection or monitoring system to warn the occupants of protected premises of the need to take action. In the majority of commercial and industrial premises, the building's fire system is the most likely initiator of a warning about a potential threat to the occupants, however in today's ever increasingly safe world, security alerts are becoming more common for other types of dangers as well.



Valerio Del Vecchio

Indeed, buildings and infrastructures are becoming more complex and their safety increasingly hard to manage. In public buildings, for example the majority of users will be unfamiliar with the layout of the building. In commercial premises, streams of customers, constantly changing numbers of employees, outside contractors and suppliers – different people move through buildings every day. Not everyone will be familiar with the building or the significance of specific emergency signals let alone escape routes. If a serious incident occurs there is a high risk that people will not be able to safely escape the danger zone. There is often a considerable delay, primarily caused by uncertainty and the fear of

looking foolish, before people respond to a genuine warning signal. Voice alarms can supplement audible and visual warning signals with clear and informative warning messages in the event of an emergency.

People tend to be more responsive to voice alarms than to audible signal only such as bells or electronic sounders; an intelligible voice command can help people react in a timely and orderly manner compared to bells sounding an alarm tone. Following fire detection, for instance, automated messages control the flow of people in stair wells and corridors, allowing an orderly evacuation without panic. Installing a voice alarm speeds evacuation and avoids the “false alarm” mentality, reducing the risk of death from fire. Voice messages inform occupants exactly what



▲ Appello voice annunciators are available in a variety of sizes and outputs.

Valerio Del Vecchio is
Marketing Manager for
E2S Warning Signals.

► Appello voice annunciators play a critical part in the Philippines' tsunami warning systems.



Image courtesy of E2S Warning Signals

to do in an emergency; people respond more quickly and are more likely to take the correct action during an evacuation if voice messages reinforce tone sounders. Despite the evidence reporting the greatly increased response times and improved evacuation, installations of voice alarms are still relatively low in number, although increasing rapidly. For general applications in larger projects such as arenas, shopping malls and high rise buildings voice alarm (VA) systems are growing steadily however, in smaller buildings, they are still fairly uncommon.

In onshore and offshore hazardous area environments, audible and visual warnings can be triggered by a number of different safety systems: fire detection, gas alarm, process control alarm and many others. With a number of different alarm sources generating different tones, even personnel who are regularly trained in emergency procedures can be subject to many potentially confusing warning messages. For example, on an offshore oil rig, everyone present is very well aware of, and is trained to react to, the three main PFEER (Prevention of Fire and Explosion, Emergency Response) audible warnings: evacuate facility, toxic gas or fire. In normal conditions other warning signals will frequently sound and background noise is high. In onshore high risk facilities such as petro-chemical

plants, there will be a significant number of office-based personnel who will not necessarily have received the same high degree of training as those whose work gives them direct involvement with the plant areas themselves. In industrial facilities, the combination of immediate danger, visibility reduction for the presence of smoke or other gases and possible reduced illumination from emergency lighting systems can lead to fear and uncertainty in even highly-trained personnel.

Irrespective of the type of facility or building where automatic detection systems are installed, the reinforcement of the audible and visual alarms with voice messages can help the occupants to respond to the emergency and remove uncertainty as to what they should do. For example, if phased evacuation from a building or area during an emergency such as a fire is required, a "standby" warning in areas not directly affected can be augmented with a voice message such as "This is a fire alert. Await further instructions." Close to the location of the fire, the evacuate tone could be followed by the voice message "Please remain calm and evacuate the building immediately."

Clearly, the technical and performance requirements of the warning devices and the nature of the warning signals will vary. In fire systems, some countries, such as

Germany, France, Holland and Australia have a defined evacuate tone; many other countries do not.

Whatever the application, the key consideration for the system designer is how to produce clear and effective audible warnings throughout the protected areas in the event of an emergency; voice alarms can help considerably. Broadly, there are two approaches: for public and commercial premises, a separate VA system can be linked to an automatic detection system that overrides the system's normal use as a feature-rich public address (PA) system, broadcasting background music and general messages. For industrial facilities, it is more appropriate to use voice messaging sounders, either as stand-alone units or combined with a beacon, as an integral part of the detection system. Both approaches normally use pre-recorded messages stored in the sounders to broadcast the warning.

E2S Warning Signals, the world's leading independent manufacturer of warning signals for use in industrial, marine and hazardous area environments designs and produces a series of intelligent voice annunciators ideally suited for VA systems. The Appello X range of user recordable voice annunciators is available as stand-alone sounders or as combined units with a LED or Xenon tube beacon in 10 different designs. Appello X is the company's latest



The detector that sees everything

- Detects flames from any fuel source
- Works through glass
- Immune to films of oil, dust, water and ice
- Superior resistance to false alarms
- Suitable for hazardous applications



T +44 (0) 1462 444 740
E sales@ffeuk.com
W www.ffeuk.com



Signalling for
hazardous areas
and
fire & industrial
applications...



Intrinsically safe, flame proof and non-sparking devices for both gas and dust atmospheres.

Fire & industrial products from panel mounted indicators through to heavy industrial signals.

Powerful alarm horns: up to 45 alarm tones with three stages. Voice alarms with up to 2 minutes of user recordable content.

High-intensity visual signals: Xenon strobe, L.E.D., incandescent, halogen and rotating mirror technologies.

Combination signals: extensive sounder and beacon combination possibilities.

Manual call points: break glass, push button and tool reset options.



Global product availability with a 5 year warranty.



www.e2s.com

generation of voice annunciators and can store up to 2 minutes of user-recordable content in four 30-second segments. These devices can record, store and play back with unsurpassed clarity user-defined voice messages, music or sounds stored directly to non-volatile memory. All units feature low current consumption and CD quality audio reproduction.

Appello X is available in either a UL94-V0 flame retardant ABS moulded enclosure or a marine grade aluminium housing, both environmentally sealed to IP66. All versions have four stages with 45 UKOOA/PFEER compliant alarm tones and the recorded content can be reproduced repeatedly, alternating with or without one of the built-in alarm tones. Both types are available as stand-alone sounders or as combined AV units with either a 5 Joule Xenon beacon or an array of 24 high output LEDs. Depending on the model, the content output varies from 101 to 111 dB(A) @ 1 m and the tones from 102 to 126 dB(A) @ 1 m. The recorded output and the tones have independent volume controls, enabling the output levels to be characterised to the location to ensure audibility without 'drenching' the area with too high a SPL.

User generated content can be easily recorded using the built-in microphone or line-in audio input. Once the recording process on a single unit is finalised, it can be used as a master unit to program all the other units in a multiple unit installation, guaranteeing synchronisation during playback. Alternatively, factory recording of user content is available if required. The available standard tones are listed below, but non-standard tones for specific application can form part of the user-recorded content if necessary.

The research evidence supports the use of voice annunciators in conjunction with traditional tone warnings to improve the effectiveness of warning signals. The Appello X has been successfully employed for a Tsunami Early Warning System in the Philippines and you can find more information about this success story on www.e2s.com. The Appello range is available in a variety of enclosure types and sizes and provides an easy to use combination of industry standard tones and user recordable messages, with integral beacons available as a standard option.

T 1	340 Hz Continuous	T 2	T 5	T 29
T 2	800/1000Hz @ 0.25 sec Alternating	T 17	T 5	T 29
T 3	500/1200Hz @ 0.3Hz 0.5 sec Slow Whoop	T 2	T 5	T 29
T 4	800/1000Hz @ 1Hz Sweeping	T 6	T 5	T 29
T 5	2400Hz Continuous	T 3	T 20	T 29
T 6	2400/2900Hz @ 7Hz Sweeping	T 7	T 5	T 29
T 7	2400/2900Hz @ 1Hz Sweeping	T 10	T 5	T 29
T 8	500/1200/500Hz @ 0.3Hz Sweeping	T 2	T 5	T 29
T 9	1200/500Hz @ 1Hz – DIN / PFEER P.T.A.P.	T 15	T 2	T 29
T 10	2400/2900Hz @ 2Hz Alternating	T 7	T 5	T 29
T 11	1000Hz @ 1Hz Intermittent	T 2	T 5	T 29
T 12	800/1000Hz @ 0.875Hz Alternating	T 4	T 5	T 29
T 13	2400Hz @ 1Hz Intermittent	T 15	T 5	T 29
T 14	800Hz 0.25sec on, 1 sec off Intermittent	T 4	T 5	T 29
T 15	800Hz Continuous	T 2	T 5	T 29
T 16	660Hz 150mS on, 150mS off Intermittent	T 18	T 5	T 29
T 17	544Hz (100mS)/440Hz (400mS) – NF S 32-001	T 2	T 27	T 29
T 18	660Hz 1.8sec on, 1.8sec off Intermittent	T 2	T 5	T 29
T 19	1.4KHz-1.6KHz 1s, 1.6KHz-1.4KHz 0.5s -NFC48-265	T 2	T 5	T 29
T 20	660Hz Continuous	T 2	T 5	T 29
T 21	554Hz/440Hz @ 1Hz Alternating	T 2	T 5	T 29
T 22	544Hz @ 0.875 sec. Intermittent	T 2	T 5	T 29
T 23	800Hz @ 2Hz Intermittent	T 6	T 5	T 29
T 24	800/1000Hz @ 50Hz Sweeping	T 29	T 5	T 29
T 25	2400/2900Hz @ 50Hz Sweeping	T 29	T 5	T 29
T 26	Bell	T 2	T 15	T 29
T 27	554Hz Continuous	T 26	T 5	T 29
T 28	440Hz Continuous	T 2	T 5	T 29
T 29	800/1000Hz @ 7Hz Sweeping	T 7	T 5	T 29
T 30	300Hz Continuous	T 2	T 5	T 29
T 31	660/1200Hz @ 1Hz Sweeping	T 26	T 5	T 29
T 32	Two T chime.	T 26	T 15	T 29
T 33	745Hz @ 1Hz Intermittent	T 2	T 5	T 29
T 34	1000 & 2000Hz @ 0.5 sec Alternating – Singapore	T 38	T 45	T 29
T 35	420Hz @ 0.625 sec Australian Alert	T 36	T 5	T 29
T 36	500-1200Hz 3.75sec /0.25sec. Australian Evacuate.	T 35	T 5	T 29
T 37	1000Hz Continuous – PFEER Toxic Gas	T 9	T 45	T 29
T 38	2000Hz Continuous	T 34	T 45	T 29
T 39	800Hz 0.25sec on, 1 sec off Intermittent	T 23	T 17	T 29
T 40	544Hz (100mS)/440Hz (400mS) – NF S 32-001	T 31	T 27	T 29
T 41	Motor Siren – slow rise to 1200 Hz	T 2	T 5	T 29
T 42	Motor Siren – slow rise to 800 Hz	T 2	T 5	T 29
T 43	1200 Hz Continuous	T 2	T 5	T 29
T 44	Motor Siren – slow rise to 2400 Hz	T 2	T 5	T 29
T 45	1KHz 1s on, 1s off Intermittent – PFEER Gen. Alarm	T 38	T 34	T 29



For more information, go to
www.e2s.com

DEFINING INNOVATION *since* 1919



INSTALLATION-READY™ TECHNOLOGY
FireLock EZ® Style 009N Coupling

victaulicfire.com



8267 REV A 07/2014
VICTAULIC IS A REGISTERED TRADEMARK OF VICTAULIC COMPANY.
© 2014 VICTAULIC COMPANY. ALL RIGHTS RESERVED.



Why Performance Testing of Windows is so Critical Today

Millions of fenestration products including windows, doors, curtain walls and storefronts are installed every year in commercial, industrial and residential buildings. Building owners, including home owners, expect that each window, door and curtain wall type has been rigorously tested for functionality, performance and safety. The building owners expect that their windows, doors and curtain walls are air tight, water tight, structurally, thermally and acoustically sound and in hurricane regions, will provide protection from high winds, pressure and wind borne debris.



Wayne Breighner

Wayne Breighner is an Engineering Manager at UL for the Building and Life Safety Technology Division.

UL and the UL logo are trademarks of UL LLC © 2015.

The International Building code requires all windows and exterior doors to be tested in a laboratory setting to industry standards such as AAMA/WDMA/CSA 101/I.S.2/A440 and AAMA 501. The laboratory testing is conducted in a controlled environment that provides a “best case scenario” as it relates to the performance of a window and door system. While the

required laboratory testing is important for safety, it does not test the physical installation of the fenestration product, which in addition to the required laboratory testing, makes performance testing of installed products crucial. Performance testing is essential to help assure expected performance of fenestration products when installed in a commercial or residential building.



Image courtesy of UL

While manufacturers typically provide a procedure for proper installation of their products, deviations from the manufacturer's procedure are common and can cause serious problems with installed products. The deviations can be caused by improper installation, inability to follow approved practices or by the jobsite conditions.

Performance testing of installed fenestration products for air and water resistance and structural integrity is critical to validate design, workmanship, and material selection prior to job site construction. Performance testing also serves to verify performance and identify the source of problems and provide information necessary to mitigate and remediate problems after installation.

Prior to job site construction, architects, contractors, consultants and building owners often require performance testing of mock-ups of a curtain wall, an exterior wall and fenestration system to evaluate air and water resistance and structural integrity to validate design, workmanship and material selection. Pre-construction test mockups allow time to implement any necessary changes to design, fabrication, and construction procedures before construction of the curtain wall, exterior wall and fenestration system commences. Implementing changes prior to job site construction achieves significant and welcome time and cost savings.

Exterior wall systems including curtain walls and fenestration products require time to design, fabricate, construct and test. Mockups are a representation of the exterior wall system and curtain wall built to study the construction and installation details, to test for performance and to assess the appearance of an exterior wall system. Mockups are tested to measure the performance level of exterior wall systems when under the effects of environmental conditions, such as wind, rain, and temperature extremes subjected to specific and controlled conditions.

After installation, field testing is conducted to ensure the quality of installation, the performance of installed products, verify compliance with architect and industry specifications and if needed, for forensics investigations to identify the source of problems in the field.

Building owners, contractors, consultants and architects often require

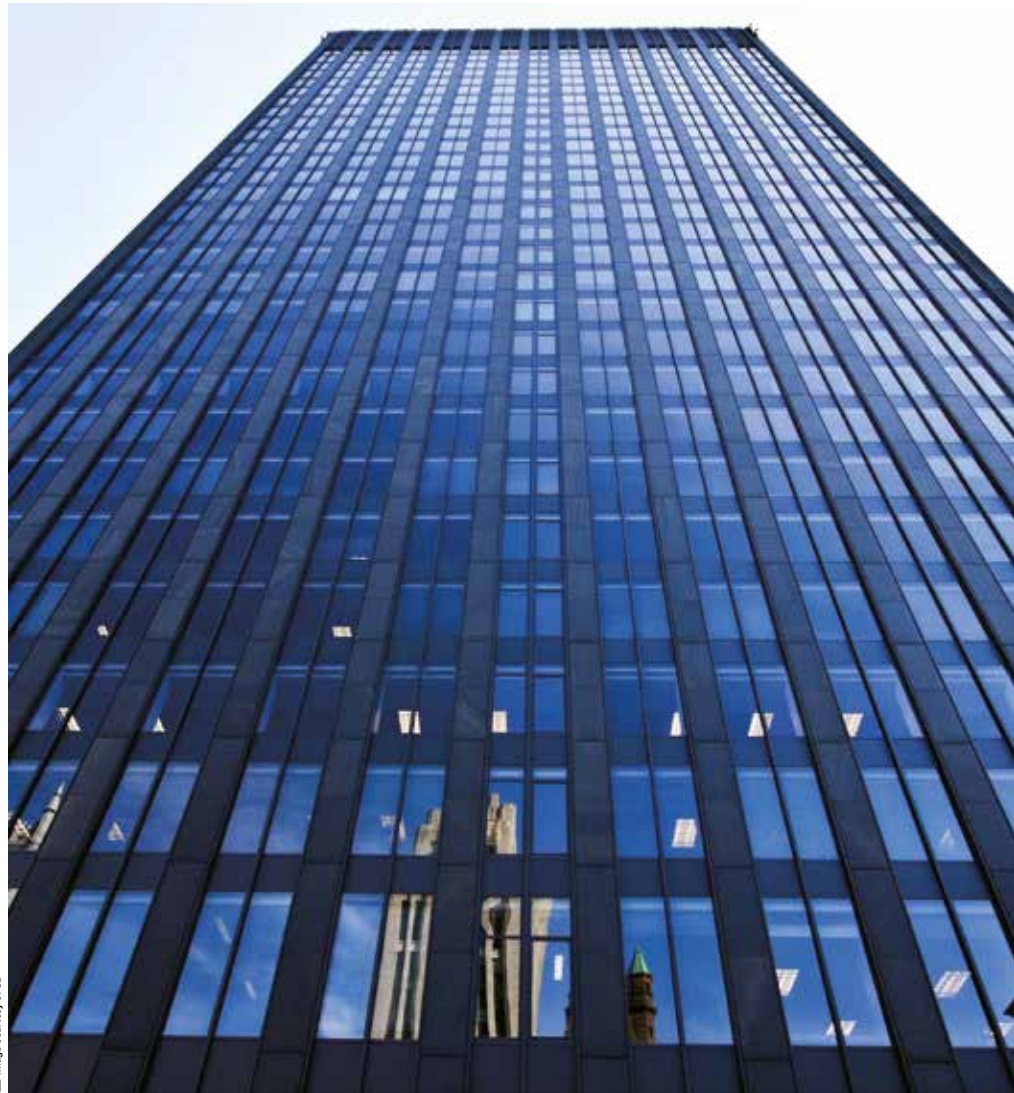


Image courtesy of UL

field testing of installed windows, doors, skylights, curtain walls and storefronts to evaluate air infiltration, air barriers, water penetration, structural, acoustical, thermal cycling, condensation and anchor pull-out test performance of installed products to architect and industry specifications. For new construction or new fenestration installation, field testing helps to ensure proper performance of fenestration products after installation. Field testing provides quality assurance and helps building owners, contractors, consultants and architects assure they are meeting contract obligations. For existing construction with problematic conditions,

field testing can provide forensic evidence to identify the source of problems and provide information necessary to mitigate and remediate problems.

UL provides a comprehensive suite of fenestration performance testing services for architects, consultants, contractors, manufacturers and building owners including laboratory, field and mock-up testing to assess air infiltration, water penetration, structural integrity, resistance to tornado and hurricane winds and much more.



**For more information, go to
www.ul.com/fenestration**

While manufacturers typically provide a procedure for proper installation of their products, deviations from the manufacturer's procedure are common and can cause serious problems with installed products.

Cirrus Hybrid Aspirating Fire and Smoke Detectors

Aspirating Detection (or Air Sampling Detection) is not a new concept as this technology has been providing early warning detection for high risk or high value applications for many years. However, aspirating detectors are now being installed in an ever increasing number of different applications for many different reasons. Therefore, it is essential that the detector itself is capable of detection across the widest spectrum of fire scenarios.



Dr. Fariz Khellaf
Ph.D, BSc(Hons), CEng, MIEE

Aspirating detection systems are one of the fastest growing sectors within the global fire alarm industry. As a result of the 2008 “dot com” crash the main aspirating detector manufacturers have been providing solutions to many different applications; other than the original concept of the product which was mainly early warning detection within high value, high risk applications. More recently, aspirating detection has become the accepted solution for many other applications including general and high

bay warehousing, cold storage, atriums and ceiling voids, high ceiling spaces such as airport lounges, indoor arenas and theatres. Power and other utility plants, industrial conveyor systems, very dusty areas and many different harsh environment applications are now being protected by aspirating detection systems. These vast and varied applications mean there are so many specifiers, installers and end users wishing to employ aspirating detection system solutions.

Cirrus HYBRID is the next generation of ‘Aspirating Detectors’ from Protec Fire Detection plc, the UK’s largest privately owned fire detection company. By utilising the two best forms of aspirating system technologies Cloud Chamber Detection (CCD) and Early Warning Smoke Detection (EWS) in one detector, the Cirrus HYBRID detector provides a single device able to detect fire and smoke over the largest range of fire types.

Aspirating detection systems draw air from the protected space via a network of supervised sampling pipes to a wall mounted fire/smoke detector. The aspirating detector employs an inbuilt blower to transport the air through the pipes from the space.

The recent advances in LED technology for optical smoke detection have allowed Protec to incorporate optics into our existing cloud chamber detector. The challenge then became two fold; the

Question:

Why Fire and Smoke Detection?

Answer:

Not all fires are the same!



Image courtesy of Protec Fire Detection

Dr. Fariz Khellaf is
Technical Director of
Protec Fire Detection plc.

◀ EN54 Part 20 Approved
Cirrus HYBRID Combined Fire
and Smoke Aspirating Detector.

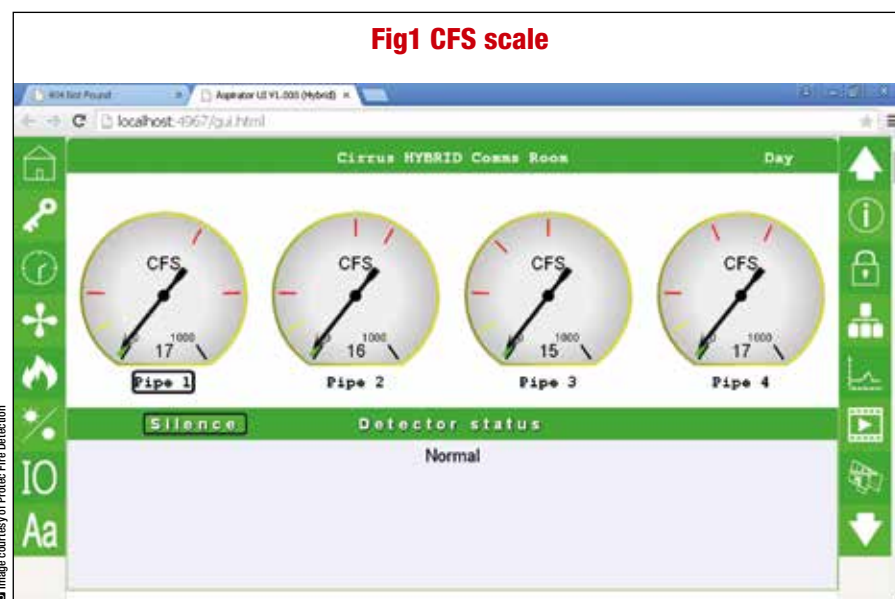
first challenge was to see how these two technologies could not just work independently, but to see if the two could work in synergy to improve the range of fire types found in the many different product applications. The second challenge was to see if we were able to make a genuine improvement on our existing product as its applications have now become so numerous. The cloud chamber detector already provides the earliest warning aspirating detector with the highest immunity to false alarms on the market. Instead of creating a marketing gimmick we wanted to advance technology and prove Protec Fire Detection remained at the forefront of fire detection solutions.

Prior to the Protec Cirrus HYBRID product, no other aspirating system manufacturer has totally integrated two different detection technologies to create a single product which is able to see a much wider range of fire types, compared with a single specific technology. For this reason Protec applied for an International patent for this concept.

Our existing Cirrus Pro aspirating detector is the only 'Cloud Chamber' detector on the market. Some fires can be clean burning, producing very little or even no smoke. For many years cloud chamber detectors (CCD) have proven to be the earliest fire detection technology, as they can identify optically invisible combustion particles created as a material overheats and more importantly, before smoke is produced or is not produced at all, (i.e. 0% obs/m). Where true incipient fire detection is required, cloud chamber detectors are the only aspirating detectors able to detect invisible combustion particles, thereby providing the earliest possible warning and the most time for corrective action to be taken. The Cirrus HYBRID employs this same cloud chamber technology, so this is quite a good starting point.

Some fires burn with only a small amount of visible smoke and some with greater volumes of smoke. The Cirrus HYBRID also employs Early Warning Smoke Detection (EWS) using high performance optical 'Scatter Chamber Detectors' (SCD) that identify both small and large smoke particles entering the detector.

However, what makes this totally new concept in aspirating fire and smoke detection technology so unique is that these two technologies work independently



from each other, and through the use of complex algorithms work together with each other, to provide intelligent alarm decision making. The result of this synergy of technologies is a device that can verify true alarm conditions and as importantly, are resistant to unwanted or false alarms which plague so many optical only aspirating detectors.

Fire and Smoke Detection

■ Fire detection

The Cloud Chamber detector identifies invisible sub-micron particles generated during the combustion process when an overheating occurs. The cloud chamber measurement scale is in particles per cm³ (PPCC) and provides the 'Fire' detection element of the Cirrus HYBRID detector.

■ Smoke detection

Optical smoke sensors identify visible smoke particles generated as material over-heats. The optical measurement scale is percent obscuration per meter (%Obs/m) and provides the 'Smoke' detection element of the Cirrus HYBRID detector.

Combined Fire and Smoke Scale

Cirrus HYBRID detectors indicate the two separate detection element scales (PPCC & %Obs/m), however, as its primary display these two scales are combined and are referenced on a bespoke scale known as Combined Fire and Smoke (CFS).

The general theory of the CFS scale is an equation where the two separate signals are integrated as PPCC and %Obs/m = CFS as shown in Fig1

In practice this theory can present three different scenarios when detector signals are reported outside of their 'normal' background levels.

The first scenario is a 'fire' signal from the cloud chamber only. This will result in the particle level rising and where applicable the relevant alarm thresholds being activated as the CFS signal will work in parallel with the cloud chamber signal. Typically, these fire conditions cannot be seen by high sensitive optical aspirating detectors.

The second scenario is where there is a 'smoke' signal from one or more of the optical sensors. This will result in display information only of the smoke level increase; however, without any increase in the cloud chamber signal no alarm thresholds will be initiated and the CFS scale will not increase. This optical signal can be caused by phenomenon other than smoke (dust as one example) and as such without a cloud chamber signal is displayed as information only, without initiating any alarms.

The third scenario is where there is a 'fire' signal from the cloud chamber AND a 'smoke' signal from one or more of the optical sensors. This will result in the cloud chamber particle level rising, which on the CFS scale, is then enhanced by a multiplier from the smoke signal from the optics, to enable the alarm thresholds to be activated earlier. This boosted effect is called the HYBRID 'Smart' signal as confirmation of a true fire condition is achieved from both detection technologies.

The CFS scale is on a 1 to 1000 numerical scale where 1 is the highest

Fig 2 Sensitivity Settings



end of the sensitivity scale and 1000 is the least sensitive value as shown in Fig2. Within this CFS scale up to four separately programmable alarm points can be configured to raise alarms. The positioning of these alarm thresholds on the CFS

scale is determined by the background level CFS reading of the environment monitored and the detector sensitivity required by the application.

Typical examples of CFS scales settings would be as follows (shown in Fig 2), given that detector sensitivity can be heavily influenced by the background particle levels experienced in the many different product applications.

▼ **Typical High Bay Warehouse Application.**



■ CFS scale settings 1 – 150

Very High Sensitivity, as would typically be required by Class A detection and most suitable for Cleanrooms, Data Centres or in areas containing high value, critical or strategically important operations or artefacts.

■ CFS scale settings 150 – 400

Enhanced Sensitivity, as would typically be required by Class B detection where fire/smoke is difficult to detect, to combat dilution or where there are high airflows or high ceiling space areas.

■ CFS scale settings 300 – 600

Normal Sensitivity, as would typically be required by Class C detection where aspirating detection is offered as an alternative to point type smoke or beam detection. This may be for a variety of reasons including maintenance access, building deflection, dilution and obstruction to line of sight.

■ CFS scale settings for 600 – 1000

Would be used typically in environments where there are high ambient background particle levels of fire/smoke, as alternative to heat detection or where aspirating detection is an acceptable detection method and compliance with standard Class A B or C detection is not mandatory, (in these applications aspirating detection solutions would normally be proved by an application specific performance test).

In addition to this completely new concept of multi-sensor aspirating detectors Protec have introduced some totally unique and technically challenging aspects to create the most user friendly, interactive aspirating detector. These innovations include live camera streams from the protected area directly into the Cirrus HYBRID. Detector/ pipe plan drawings of the complete sampling pipe installation covered by the specific detector indicated on the touch screen LCD display. A suite of 'Fault finding' animations to assist engineers in ensuring all detectors remain fully operational at all times.

For further information on this innovative product, and other industry leading fire alarm system products and services please email or contact our sales team on 01282 717171.



**For more information, email
sales@protec.co.uk**

SPECIAL HAZARD FIRE PROTECTION SOLUTIONS THAT REDUCE DOWNTIME, IMPROVING BUSINESS CONTINUITY.

Offering a global team of trained distributors ready
to evaluate, design, install and service our systems
whenever and wherever
they are needed.

Clean Agent Fire Extinguishing Systems



3M™ Novec™ 1230 Fire Protection Fluid



•

Low Pressure and High Pressure CO₂

•

Alarm & Detection

•

Air Sampling Detection

•

Water Mist

•

Foam



JANUS
FIRE SYSTEMS®

+1 219-663-1600

www.janusfiresystems.com

The Effectiveness of LED Devices in Warning of Fire

Visual alarm devices (VADs) are used to warn deaf and hard of hearing people in the event of a fire, and to provide silent warnings where required. The effectiveness of VADs, most of which are Xenon or LED flashing light devices, in gaining the attention of people is critical to providing reliable warnings. VAD effectiveness has been investigated in this study, using one Xenon device and five different LED devices of varying light pulse durations.



Raman Chagger

Raman Chagger is Principal Consultant (Fire Detection) at BRE.

LED VADs can be designed to produce a broad range of pulse types with varying degrees of effectiveness at providing fire warning. With increasing capabilities of modern LEDs a private client commissioned BRE to investigate whether the flashing signals from LEDs could, and under what conditions, be as effective as those from Xenon's.

Conducted by BRE's Fire Detection group at its test facilities in Watford, UK this study has investigated the:

- relative performance of Xenon and LED (with light pulse durations of ≤ 40 milliseconds) VADs,
- effect of decreasing pulse durations in LED devices,
- effect of using warm white and cool white LED devices,
- effect of the ambient light level,
- proposal to change the constant used in the Blondel-Rey formula.

Calculating VAD effectiveness

Test standards around the world use the Blondel-Rey formula to calculate the effective luminous intensity (I_{eff}) – expressed in candela (cd) – of pulses generated by Xenon and LED VADs. This calculation is used to rate a device's warning effectiveness.

To calculate effective luminous intensity the light output from a single pulse is integrated over time and divided by the sum of a constant 0.2 seconds (s) and the pulse duration (in seconds). According to the Blondel-Ray formula, effective luminous intensity can be the same for a Xenon device producing a high peak intensity with very short pulse duration (typically

less than 1ms), and an LED device with a very low peak intensity that can produce very long pulses (up to 200ms). If the calculated values from these are the same then human responses to a direct presentation to both should be similar.

However, whilst the basis of the Blondel-Rey formula is a study involving the direct viewing of light sources, visual warnings are actually most often detected through indirect viewing, i.e. seeing the light in the peripheral vision. This has led many to question the suitability of the formula for the rating of fire warning devices intended to alert people. Reports on other studies in this area include a proposal from the Light Research Center (LRC) that the use of an amended constant – 0.01 s instead of 0.2 s – is more suitable.

This study specifically investigated the relative responses of people to Xenon and LED flashing devices with shorter pulse durations (≤ 40 ms), and to test the LRC proposal for the formula constant. The effect of the colour temperatures of LED devices was also examined, using a combination of cool white and warm white LED VADs.

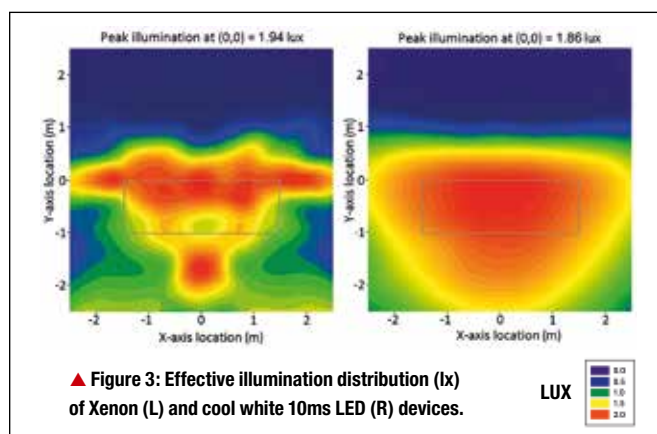
Test Methodology

The pulse durations and effective luminous intensities of the six VAD devices tested are shown in the table.

To test the different devices, volunteer participants were seated at a desk in front of a screen with the following ambient illumination levels:

- High ambient condition: 500 lx on a table top and 200 lx on a screen.
- Low ambient conditions: 250 lx on a table top and 100 lx on a screen.

Device	Type	Pulse duration (ms)	leff face on (cd)
1	Xenon (with 2 filters)	0.21	48.6
2	Cool white 40ms	37.8	49.5
3	Cool white 20ms	18.7	48.4
4	Warm white 40ms	38.4	47.6
5	Warm white 20ms	18.9	49.6
6	Cool white 10ms	9.3	46.6



Test Room Conditions

The test room parameters, such as its dimensions, light fitting locations, and the reflectance levels of all surfaces, were input to a DIALux program. The program uses this data, together with the specifications from a database of light fittings, to identify the most appropriate set-up to produce the required illumination levels. The DIALux program identified four wall-washer light fittings that, using a dimmer switch, would most closely meet those requirements.

A simulation from the DIALux program is shown in Figure 1, and a photograph of the actual illumination level for the high ambient condition is shown in Figure 2.

► Figure 1: DIALux simulation of a space with four wall-washer light fittings.



► Figure 2: Actual illumination in high ambient light.



A non-uniform distribution of illumination on the screen could be a contributing factor to subject responses, if they were naturally more attuned to detecting contrast variations. Using the simulation and wall-washer lighting, this variable was controlled and a relatively uniformly lit screen and table top was achieved under the high and low ambient light level conditions.

Light distribution tests were performed on the six different devices to identify their peak light levels and effective illumination distributions. The data generated from these tests were plotted on a colour contrast chart to give a visual representation on a screen opposite the device (at 5m) of the effective light contrast and effective illumination

distribution. Two of these are shown in Figure 3, for the Xenon device (left) and the cool white 10ms LED device (right). The Xenon VAD was modified using two filters to give the distribution shown, as the original distribution from the device was more like that from a spotlight.

These distributions were considered similar in terms of the peak effective illuminations, directly opposite the devices, at (0, 0) and the effective illumination distributions.

Participant Selection and Test Procedure

The three main variables identified as potentially affecting the responses of the volunteer test participants, were gender, age and whether they wore glasses. Sets of 12 participants were selected to take account of gender (M/F), glasses (Y/N) and age group (<40, 40-60, >60). It was established that eight sets would be required to have sufficient statistical data, totalling 96 participants.

Volunteers matching these demographic profiles were contacted using the BRE research project volunteers' database. They were told that the work was part of an office environment research project that was investigating how well people were able to concentrate under different light and sound level conditions, whilst performing a written arithmetic and comprehension test. The volunteers were also informed that there was a chance of winning £100 for scoring the highest in the tests.

The experiment was designed to distract the participants from the true purpose of the test, with the prize money introducing a competitive element that focused their attention during the trials and prevented them from looking out for the flashing light.

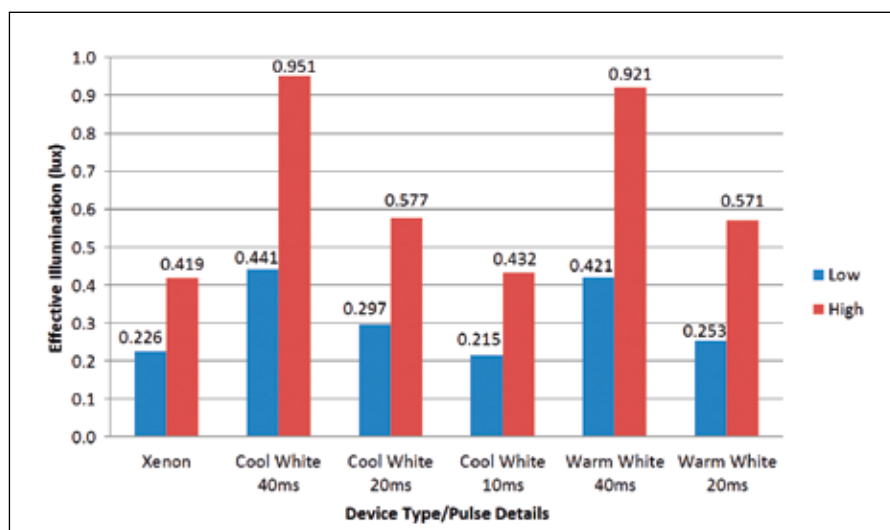
The participants were seated at a desk in front of the screen and were given two written exercises to work through. They were instructed to raise their hand if they became aware of a flashing light and then continue with the test. The flashing signals from the six devices were presented individually to all participants in a random order. They were flashed one at a time from a distance of 19m and then gradually brought closer to the screen until the subjects responded. The devices were aligned such that the normal axis was in line directly above the test subject's head and 2m from the ground.

Two looped sound files of a typical office environment were played in the background at a level of 45 ± 5 dB. This served to cover sounds from the popping Xenon VAD, the wheels of the trolley on which the devices were mounted and switches being changed on the control box.

Following the test a short, simple examination of peripheral vision was conducted on every participant to check for any unusual responses (due to visual impairments) that could skew the data. Advice from an optometrist was taken on how to perform a basic peripheral vision test.

Further details of issues such as the limitations of human peripheral vision, the participant selection process, the pulse profiles of the devices tested, the methodology for normalising devices, and the analyses of sample numbers and demographic sets, can be obtained from the briefing paper available from the BRE website.

▼ Figure 4: The peak performance responses for all devices under both light levels conditions.



Analysis and Conclusions: Peak Performance

The participant's average response distance measurements were used to calculate the effective illumination levels at the peak performance for each device, for both the high and low ambient light level conditions. Low levels of effective illumination indicate that less light was required to alert participants to the flashing lights (i.e. they were seen from a greater distance and were thus more effective).

The results demonstrate that the Blondel-Rey formula does not lead to similar effective illumination levels, in terms of the response of participants, for different pulse types and durations. If that was the case, all of the values under low ambient conditions would have been at the same level, as would all of those under high ambient conditions.

The following conclusions were drawn from these results:

As pulse durations of LED devices shorten the attention drawing effectiveness increases (this is true for both warm and cool white light in both high and low ambient light level conditions).

The Xenon and 10ms cool white LED devices were more effective than the 20ms cool white and warm white LED devices, which were in turn more effective than the 40ms cool white and warm white LED devices.

The responses from warm white LED devices and the equivalent cool white devices are at similar levels.

The responses from Xenon and 10ms cool white LED devices were similar under high and low ambient light level conditions, indicating that LED devices run at shorter pulse durations can be as effective as Xenon devices.

The Blondel-Rey Constant

The study by the LRC had reported that the use of the constant $a=0.01s$ was more appropriate than 0.2s. This was investigated by comparing the results from all six device types and using a multiplying factor to convert the effective illumination levels recorded for each of them.

The revised data indicated that the peak performance responses for the LED devices were more comparable; however this was not the case for the Xenon device. For Xenon devices the proposed new constant is not appropriate because their pulse duration (typically $<1ms$) is significantly shorter than the constant 0.01s. When using this constant the pulse duration of the Xenon device effectively plays little or no part in the denominator that forms part of the Blondel-Rey equation. Further work is required on Xenon devices with different pulse durations and peak intensities to identify a suitable formula that would equate their responses to those of LED devices.

LED Benefits

One of the benefits identified of using LED devices is that the arrangement of a single light source in a lens is more conducive to producing a uniform distribution to provide effective warning throughout a protected space. To match this using a Xenon tube in a complex arrangement incorporating a lens and various reflectors is a challenge. Thus LED devices can more readily be configured so that they alert people located anywhere in the protected space, rather than just highly illuminating selected areas.

More Information and Future Work

Further details of this work can be found in a briefing paper and a video detailing the research work which are both available from the following website address: www.bre.co.uk/fire-detection-research

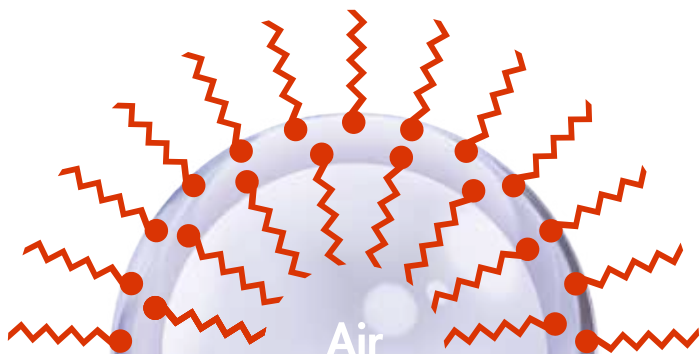
Further work on VADs is due to take place in collaboration with a number of other interested parties. This will investigate the effects of:

- using VADs with different colours,
- a wider range of background illumination levels,
- a wider range of pulse durations.



For more information, go to www.bre.co.uk

Fatal Attraction



Fluorine-free foam bubble

F3 Foam **attracts** hydrocarbon fuels

 **Hydrocarbon surfactant**
(Hydrocarbon tails are fuel-loving)

FORCEFUL F3 APPLICATION:

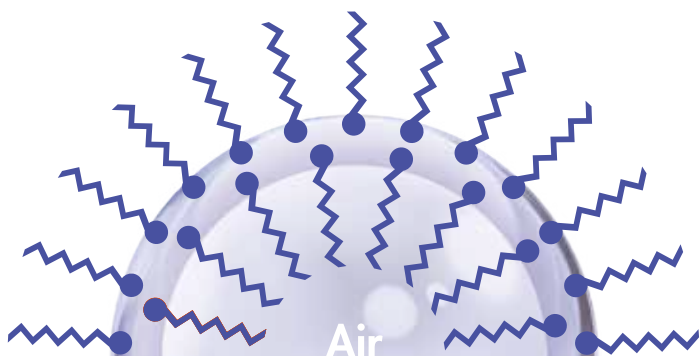
- Foam attracts fuel
- Foam becomes flammable
- Foam has reduced performance
- Foam use is increased

Need proof? See F3 foams on fire:



FORCEFUL AFFF APPLICATION:

- Foam repels fuel
- Foam is NOT flammable
- Foam has superior performance
- Foam use is reduced



Fluorinated foam bubble

AFFF Foam **repels** hydrocarbon fuels

 **Fluorosurfactant**
(Fluorocarbon tails are fuel-hating)

One year ahead of the US EPA 2010 / 2015 PFOA Stewardship Program deadline, Dynax only manufactures high purity C6 Fluorosurfactants, Foam Stabilizers and optimized High Performance Blends meeting the toughest fire performance specifications (including Mil F) at traditional / reduced Fluorine Levels.

DYNAX CORPORATION
PO Box 285, Pound Ridge, NY 10576 USA
T 914 764 0202 techinfo@dynaxcorp.com
F 914 764 0553 www.dynaxcorp.com

dynax
FLUOROchemicals

Steel Structures in Modern Building Design Present a Puzzle

The use of steel in modern building design offers even more flexible usage than ever before, and with it comes the need to ensure that fire safety is not compromised. Here, Bob Glendenning of Sherwin-Williams Protective and Marine Coatings Europe, Middle East and Africa (EMEA) examines the issues.



Bob Glendenning

Bob Glendenning is Manager, Fire Engineering and Estimation, Sherwin-Williams Protective and Marine Coatings, Europe, Middle East and Africa (EMEA).

Design of modern buildings is being pushed to the boundaries. Architects and design engineers can use cellular beams for example to great effect, sometimes left exposed as part of the aesthetic finish, and adding to the fascination of tall, complex structures.

However, as the design is becoming all-embracing, so the load-bearing equations can alter and the need for the appropriate level of fire safety becomes paramount.

Although fire deaths are falling, insurers are concerned at increasing fire losses, which are at the highest level ever experienced since records began, totalling around £3.4 million per day.

The use of new materials and modern methods of construction are also resulting in greater volatility to fire.

However, there is an increasing blurring of the lines of precisely where the

responsibility for fire safety lies through the process of concept, design and installation.

It can change project by project but should in practice lie with the designer along with other specification details, whether they are amended through the development stages or not.

The reality is becoming slightly different, and worrying. Quite often the steelwork contractor or specialist site fire protection contractor is now expected to take on this responsibility as the project build moves through the process.

They in turn will often rely on other suppliers in the chain for advice such as coatings experts. We at Sherwin-Williams often provide guidance on products to all known standards and are happy to do so as part of our own part in the supply chain.

Ultimately, the responsibility under legislation lies with the 'Responsible Person' as described in the Fire Safety Reform Order (2005), which for the purposes of the law is referred to as 'the employer and/or the building owners or occupiers.'

▼ **Complex...new**
modern steel structures.



Image courtesy of Sherwin-Williams

They are duty-bound to carry out a fire safety risk assessment and keep it up to date. This shares the same approach as health and safety risk assessments and can be carried out either as part of an overall risk assessment or as a separate exercise.

Based on the findings of the assessment, employers need to ensure that adequate and appropriate fire safety measures are in place to minimise the risk of injury or loss of life in the event of a fire.

Once they have identified the risks, they can take appropriate action to control them, remove the risk altogether or reduce the risk and manage them. They should also consider how they will protect people if there is a fire.

How is the Responsible Person to understand and act to cover these issues? The only way very often is to employ fire safety experts, which in turn comes with a cost. A worrying trend is emerging where the complexity of fire safe design means it can be out of the sphere of knowledge of the Responsible Person, the steel frame designers and indeed, where employed, the fire consultant, particularly if employed to consider non-structural aspects of fire safety.

Designing structures in the ambient state with no consideration for the fire condition is unacceptably risky and irresponsible. Our current industry procedures mean that this can easily happen and the burden of ensuring fire safe design, which may well include additional costly measures, is placed with either the wrong party or, in the worse case, missed altogether.

The danger in cutting corners is that the fire safety measures will be compromised. We believe the responsibility in modern building design should lie with the designer up to handover of the building and then, with full knowledge of all fire safety requirements, it becomes the responsibility of the owner/manager.

We believe there is a need for clarity here as building design develops against legislation scoped out some years ago to different design models/codes, particularly in relation to beams with web openings.

The level of protection afforded on any building where large numbers of people move about has to be proportionate to the structure. If this falls short, the time the protection provides for rescue services in the event of a real fire could be reduced and potentially the load bearing capacity of the steel breached much more quickly

than anticipated, threatening the safe evacuation of people.

At Sherwin-Williams, we have developed our own piece of software to make sure these calculations can be specific and measurable.

For the first time, the software in the new Firetex Design Estimator 2.0 (FDE) offers the capability of providing calculations for all shapes and configurations of apertures within cellular beams as well as efficient handling of unfilled voids with trapezoidal profiled metal decking systems.

Other benefits of this package include project sharing as well as designs to the emerging Eurocodes. The FDE is independently tested and fully verified under the Exova Certifire scheme and, in the case of cellular and fire engineered beams, more verified by the University of Manchester. Of real interest to the contracting world is that the FDE is also fully Building Information Modelling (BIM) enabled. Working closely with our partners we enable our FIRETEX fire protection properties to be fully visualised in the 3D model and available for all stakeholders including QA for application (construction as well as tender bidding) as well as the fire and rescue services and building owners during service.

The estimation and design tool also provides support where a limiting temperature has been specified, useful when a client is working alongside a fire safety consultant for example.

The benefits of best practice in fire safety engineering can be seen as an integrated package of measures within the FDE, designed to achieve the maximum benefit from the available methods of preventing, controlling or limiting the consequences of fire.

Some of those in the supply chain may question why steel parts for new buildings – whether a beam, column or brace for example – would be over-specified and under-utilised in terms of their load bearing capacity in their ambient design state.

In reality, this performance-based approach allows designers to account for different applied loads being used in various parts of a building for a diverse set of reasons rather than the 'one-size-fits-all' prescriptive approach which assumes loads and tolerance.

The trend to assume loads well under the reality of performance-based modelling



Image courtesy of Sherwin-Williams

▲ Challenging...fire engineering for today's buildings.

on each section of steel in today's complex buildings – thus creating savings for the project in fire protection – is dangerous indeed.

This issue is becoming more complex as designers factor in longer span beams as the pressure to create more letting space becomes more intense.

With more openings and fewer columns, the flexibility of buildings also increases to meet the needs of usage today, with many new steel structures accommodating commercial use as well as living, retail and leisure within the same structure.

Increased knowledge of how real buildings react in fire and of how real fires behave, has led many authorities to acknowledge that improvements in fire safety may now be possible in many instances.

Using modern fire protection design, savings can be made when used professionally and can play a major part in delivering a safe, cost-effective project.

It is the responsibility of the designer working with the fire protection expert to establish the correct level of steel ambient utilisation and with it the appropriate level of protection, amended if needed through the development.

At the heart of fire engineering is safety, no matter how complex and demanding the buildings, in the interests of lives and property.



For more information, go to
www.sherwin-williams.com/protectiveEMEA

Environmental Regulations and the HFC-Based Clean Fire Extinguishing Agents

Since the publication of our original article *Environmental Regulations and HFC-based Clean Fire Extinguishing Agents* in the February 2013 issue of *International Fire Protection*, two major pieces of environmental legislation have been introduced that substantiate the continued sustainability of HFCs in fire protection. In this article, we discuss the implications in fire protection of the US EPA Final Rule 20 and the EU F-Gas II Regulations.



Mark L. Robin PhD

Environmental impact: the scientific facts

■ Ozone Depletion

Since hydrofluorocarbons (HFCs; e.g., FM-200) do not contain chlorine or bromine, they do not contribute to the destruction of stratospheric ozone; as a result, HFCs are not subject to the provisions of the Montreal Protocol, which pertain only to ozone depleting substances (ODSs).

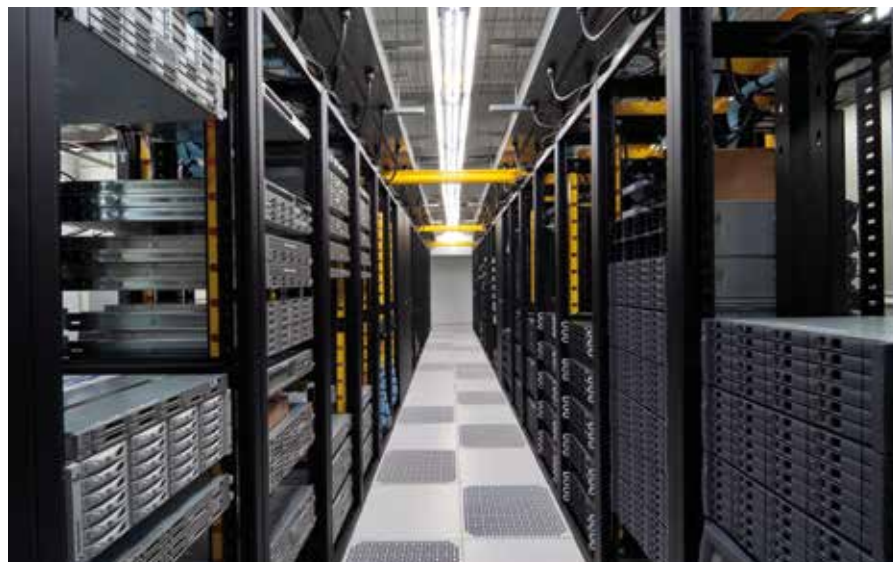
■ Global Warming

The impact of HFCs in fire protection on global warming/climate change is often misunderstood and misrepresented. It is important to understand that the impact of a gas on climate change is a function of both the GWP of the gas and the amount of the gas emitted. For example, carbon

dioxide (CO₂) has one of the lowest GWP values of all GHGs (GWP=1), yet due to the massive amounts of CO₂ released into the atmosphere from numerous sources emissions of CO₂ account for approximately 85% of the impact of all GHG emissions. Clearly, the GWP value by itself cannot be employed to evaluate the environmental sustainability of a particular compound. Emissions of HFCs from fire suppression applications are extremely low, hence the impact of these emissions on climate change is negligible.

Information related to the environmental impact of HFCs in fire protection is available from several independent sources, including the US EPA [1] and the European Environment Agency [2], and indicates that the contribution to global warming of HFCs in fire protection is negligible. For example, in the US the impact on global warming of HFCs in fire protection represents 0.019% of the impact of all greenhouse gases on global warming. For the EU-15 countries,

▼ **HFC Clean Fire Protection Agents Protect
Thousands of Datacenters Worldwide.**



Mark L. Robin is Senior
Technical Services
Consultant, Specialty
Fluorochemicals at
Chemours Fluoroproducts.

Image courtesy of Chemours Fluoroproducts

the impact on global warming of HFCs in fire protection represents 0.05% of the impact of all greenhouse gases on global warming.

Historical data reveals that the contribution of HFCs in fire protection to global warming has remained essentially constant for almost a decade. As seen in Figure 1, the 2015 report from the HFC Emissions Estimating Program (HEEP) indicates the impact of HFCs in fire protection is not increasing significantly and has remained steady for more than a decade, despite the growing installed base.

Not all hfc's are created (or treated) equally

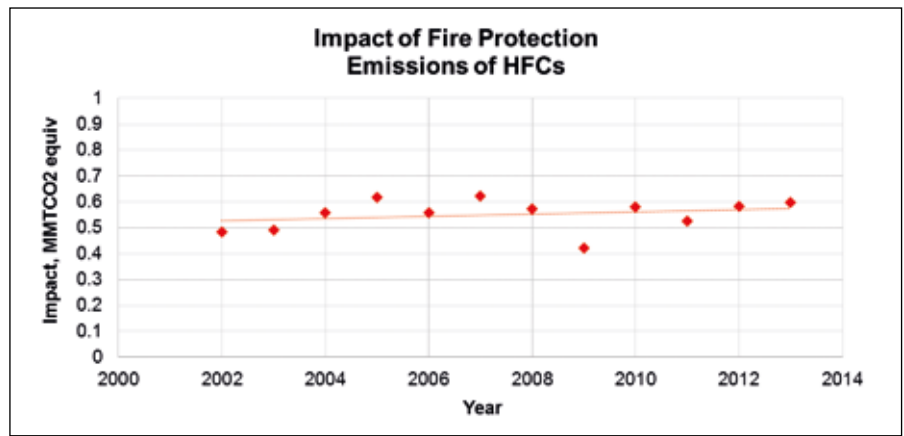
Figure 2 shows that the impact of HFC emissions on global warming from other much larger and much more emissive HFC applications such as refrigeration dramatically dwarfs the impact of HFCs in fire protection applications.

Regulatory bodies understand the above scientific facts and to date HFCs in fire suppression applications have been subject to different sets of regulations. For example, since 2006 the original European Union F-Gas Regulation has treated HFCs in highly emissive applications such as mobile air conditioning (MAC) differently than HFCs in fire protection applications: HFCs in MAC applications are regulated under a separate MAC Directive of the F-Gas Regulations.

US EPA final rule 20

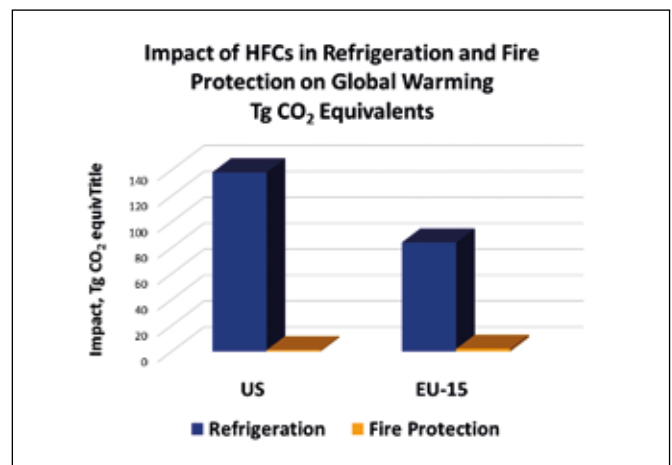
On July 20, 2015 the U.S. EPA published its Final Rule on the Change of Listing Status for Certain Substitutes under the Significant New Alternatives Policy (SNAP), also known as US EPA Final Rule 20. The US EPA explains their reason for the listing status changes on the first page of the document: "We make these changes based on information showing that other substitutes are available for the same uses that pose lower risk overall to human health and the environment." The Final Rule will change the approval status of certain HFCs in refrigeration, foam expansion and aerosol propellant applications.

The effects of Final Rule 20 on HFCs in fire protection? None whatsoever. Under Rule 20 there are no changes to the listing status of any HFC in any fire protection application, and the HFC-based clean agents continue as approved, effective and sustainable fire protection solutions. The Final Rule is consistent with the negligible impact of HFCs in fire protection on global



▲ Figure 1. Impact of HFCs in Fire Protection on Global Warming. Source: HEEP Final Report for 2002-2013, 2015.

► Figure 2. Impact on Global Warming of HFCs in Refrigeration and Fire Protection.



warming, and in addition is consistent with the lack of alternatives which match the overall combination of proven performance, safety in use and cost effectiveness offered by the HFC clean agents.

European Union F-Gas II Regulations

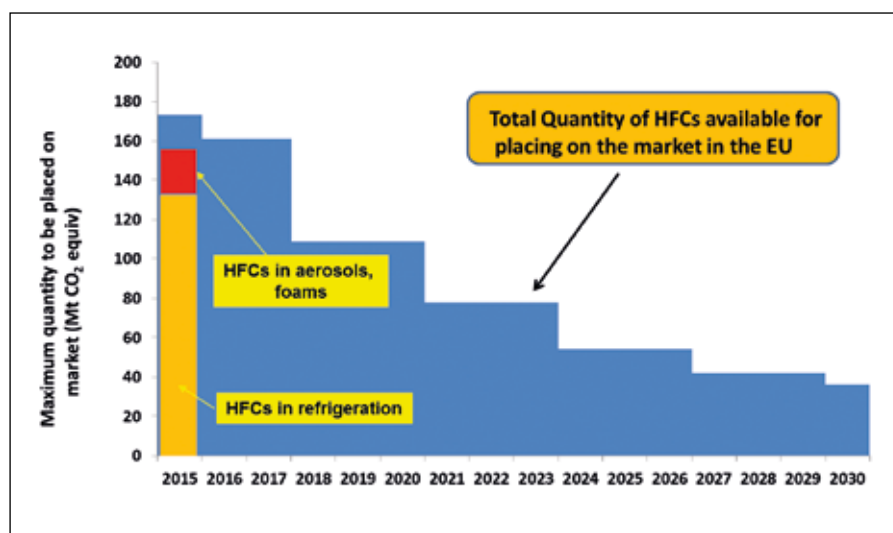
■ Original EU F-Gas Regulation

Regulation (EC) No 842/2006 of the European Parliament and of the Council on certain fluorinated greenhouse gases, the original "EU F-Gas Regulation," published on May 17, 2006, and entered into force in 2007. The primary objective of EC 842/2006 was to prevent and reduce emissions of HFCs. EC 842/2006 included, in Articles 3 through 10, requirements related to the prevention of leakage (containment), recovery, personnel training, record keeping, reporting and labeling, all with the goal of reducing unnecessary emissions. The regulation recognized fire suppression applications as essentially non-emissive, and imposed no restrictions on the use of HFCs in fire suppression applications. For a detailed review of the original F-Gas Regulations and HFC clean agents, see the February 2013 issue of International Fire Protection.

■ EU F-Gas II Regulation

Regulation (EU) No 517/2014 of the European Parliament and of the Council of 16 April 2014 on fluorinated greenhouse gases and repealing Regulation (EC) No. 842/2006, also known as the "EU F-Gas II Regulation," entered into force on 1 January 2015 and repealed and replaced the original EU F-Gas Regulation. Consistent with US EPA Rule 20, the EU F-Gas II Regulation also recognizes the value and sustainability of the HFC clean agent fire protection technologies – since HFCs in fire protection have a negligible impact on global warming, restricting HFC use in fire protection applications would not provide any significant reduction in global warming.

The EU F-Gas II Regulation retains the requirements of Articles 3 through 10 from the original EU F-Gas Regulation related to containment, recovery and training – as a result, the fire protection industry is already complying with these requirements. EU F-Gas II requirements related to containment, including leakage prevention, repair and inspection schedules, are satisfied by the existing inspection regimes established in the ISO 14520, EN 15004 and NFPA 2001



▲ **Figure 3. European F-Gas II Allocation**
Scheme: maximum quantity of HFC allowed to be placed on market.

standards. Numerous commercial entities, already actively involved in the recovery, reclamation and recycling of HFC-based clean fire extinguishing agents, currently meet the recovery-related requirements of the EU F-Gas II Regulation. Training and certification programs for personnel involved in the handling of fluorinated GHGs have been in place for more than a decade within the fire protection sector, meeting the training requirements of the EU F-Gas II Regulation. In summary, the requirements of Articles 3 through 10 of the EU F-Gas II Regulation involve activities already part of any responsible product stewardship program and impose no additional restriction or burden on the use of HFC-based clean agents.

▼ **Table 1. F-Gas II Regulation: Reduction Schedule.**

Years	Maximum Quantity of HFCs (based on tonnes of CO ₂ equivalents) That Can be Placed in the Market
2015	100% (of 2009-2012 average)
2016-2017	93%
2018-2020	63%
2021-2023	45%
2024-2026	31%
2027-2029	24%
2030	21%

■ EU F-Gas II Allocation Quotas

A significant change from the original EU F-Gas Regulation of 2006 is the creation of allocation quotas. Article 16 of the F-Gas II Regulation establishes an allocation of quotas for placing HFCs on the market in the EU each year; Article 15 requires that producers and importers not exceed their quota. Article 16 establishes a reference value for producers and supporters, based on the annual average of quantities of HFCs (expressed in terms of CO₂ equivalents) each have placed on the market from 2009 to 2012. The reference value is calculated in accordance with Annex V of the Regulation and quotas are then allocated employing the reference value and the allocation mechanism described in Annex VI of the Regulation.

The allocation framework of the F-Gas II Regulation does not inhibit or limit the sale of HFCs into the fire suppression market. The allocation scheme represents an overall “cap and reduction” of HFCs on a GWP-weighted basis over a specific time period – a “phase-down,” NOT a “phase-out” of HFCs. The phase-down mechanism involves a gradually declining cap on the total of bulk HFCs (in tonnes of CO₂ equivalents) placed on the EU market: with a freeze in 2015, followed by a first reduction in 2016 and by 2030 reaching 21% of the levels sold in 2009 to 2012. An important aspect of this allocation scheme is that it does not restrict the amount of any particular HFC placed on the market or the amount of HFCs used in any particular application; it simply restricts the total CO₂ equivalents of all HFCs that can be placed on the market in a given year. Table 1 shows the schedule as indicated in Annex V of the Regulation.

Figure 3 provides a graphical representation of the EU F-Gas II allocation scheme. The HFC phase-down, as stipulated by the EU F-Gas II Regulation is unlikely to affect the supply of HFCs available for fire protection in the EU market. Fire protection represents only 1% of the EU HFC market on a mass basis and 3% of the total EU HFC market on a GWP-weighted basis [3]. As seen in Figure 3, HFCs in refrigeration, foam blowing and aerosol propellant applications account for almost the entire EU HFC market. In the future the allocations required for these markets will be only a fraction of what is required today, due to the replacement of HFCs in refrigeration, propellants and foam expansion. For example, the need for HFC refrigerant allocations is already decreasing as the mobile air conditioning industry migrates from HFC-based to HFO-based technologies. HFO-1234yf is already installed in over 6 million automobiles, and is projected to be installed in approximately 18 million automobiles globally by 2016. Additional regulatory constraints on specific HFCs in refrigeration and other non-fire protection applications, along with the shrinking requirements of the HFC refrigeration market, will result in unused allowances, providing more than enough rights for HFCs used in fire protection.

Conclusion

The emissions of HFCs in fire protection are extremely low; hence their impact on global warming is negligible. As a result, restricting HFC use in fire protection applications would not provide any significant reduction in global warming and regulators can provide greater benefit to the environment with more focus on sectors with much larger impacts. Regulators clearly understand this, as evidenced by the recent decisions of the US EPA and European environmental regulators. US EPA Final Rule 20 and the EU F-Gas II Regulation are based on sound science and recognize the value, importance, and non-emissivity of HFC clean agents in fire protection.

With the recent major regulatory decisions in the USA and Europe, HFCs in fire protection remain approved, effective and sustainable fire protection solutions.

For more information, go to
FM200.com



AURORA[®]
AURORA[®] EDWARDS SERIES
FAIRBANKS NIJHUIS[®]

**INNOVATIVE
FIRE PROTECTION
SOLUTIONS FOR
INDUSTRIAL FACILITIES**

With PENTAIR you have a versatile partner dedicated to performance-based engineered fire protection solutions.

Our proven skills in manufacturing quality pumps and systems result in a **BETTER** fire system **DESIGN**--
Safer. Code-Compliant. Innovative...BETTER BY DESIGN.



www.AuroraPump.com
www.FairbanksNijhuis.com
WWW.PENTAIR.COM



OIL & GAS * MARINE * POWER * CHEMICAL * MANUFACTURING

Fire-Cryer® Plus Voice Sounders

No Compromise - Be Seen, Heard and Understood!

With superb clarity, integrated synchronised LED strobe and 7 selectable messages from a multi-lingual library of hundreds, the Fire-Cryer® Plus enables a standard fire alarm system to signal much more than just fire.

Using just 2 wires, Fire-Cryer® Plus is 100% synchronised and offers four unique fully compatible models - wall or base mounted, open area and industrial units.

A dedicated interface is available for integration with gas extinguishant panels to provide a cost effective and clear delivery of staged alarms.



EN 54-3
Approved



VimpeX is a specialist manufacturer and supplier of Fire Detection, Alarm and Evacuation products.

www.vimpeX.co.uk

Tel: +44 (0) 1702 216 999

VIMPEX
Shaping Alarm Technology

Manual Call Point Misuse?

Problem Solved!



Every false alarm is costly, disruptive and detrimental to safety. It may also affect customer service, productivity or the general routine of any organisation.

The Euro Stopper® is an effective deterrent in helping to significantly reduce false alarms, saving time and money. Quick and easy to install and protecting within minutes, when lifted, a powerful 96 dB integral alarm is activated drawing immediate attention to the area and a prankster will either run or be caught.



Safety Technology International (Europe) Ltd
For more information please contact Sales:
Telephone **01527 520999**
info@sti-europe.com | www.sti-europe.com



New safety feature!

The Euro Stopper frame now 'glows in the dark!' Call Sales to find out about this new innovative technology

Glow Guide

Smoke Shafts – The Solution for Smoke Control in High Rise Buildings

Smoke shafts are now the most commonly employed smoke control measure for high rise buildings such as hotels, offices and apartment blocks, being more widely adopted than automatic opening vents and pressurisation systems.



Ross Barritt

Ross Barritt, operational marketing manager for fire safety at FläktWoods.

The term 'smoke shaft' is commonly used to describe quite simple ventilation systems installed in the lobbies of tall buildings to maintain tenable conditions in the escape routes that would usually be used in the event of a fire. A vertical builders' work duct that rises through the building would typically be used to extract smoke from the lobbies, with each one having a damper connected to the builders' work duct.

Smoke shafts originated from BRE research presented in the 2002 report *Smoke Shafts Protecting Fire Fighting Shafts, Their Performance and Design*. This specifically looked at firefighting shafts and proposed natural ventilation (commonly known as the BRE Shaft) – which relies on the buoyancy of hot smoke and the inlet of fresh air to extract smoke in the event of a fire.

Mechanical smoke shafts

However, in order to reduce the space required (BRE require a 1.2 to 2.5m² shaft rising through the building for natural flows, where-as a mechanical smoke extract shaft can be applied with a 0.6m² shaft), mechanically ventilated shafts have been developed and accepted to provide both firefighting access and means of escape protection. They are ideal for regular multi-storey buildings up to 20 storeys in height, and are particularly suitable if space constraints prevent the use of simpler solutions.

However, whereas guidance for natural smoke shafts can be found in the Building Regulations (paragraph 2.26 of the Approved Document B),

▼ Smoke Shaft Vent fan and control module installed in London.



Image courtesy of FläktWoods

► Flakt Woods
factory-assembled
fan and control module
with duct connection
for minimal on-site lifts
and simple installation.



mechanical smoke shafts do not yet appear in the regulations, and are treated as a fire safety engineered solution. So, although they are a very common solution and are actually very simple extract systems, there is still an air of mystery surrounding their design and application.

With no single common standard applying to mechanical smoke shafts, they are typically approached using the appropriate parts of several related documents; Approved Document B of the Building Regulations is applied to the stairwell ventilators, lobby ventilators, system triggering method and ventilator free area measurement; European Standard 12101 Parts 6,7,9 and 10 are referenced for fans, ducts, control equipment and power supplies, and PD 7974-6:2004 is used to identify acceptable conditions for the escape of occupants of buildings.

In addition, the Smoke Control Association document guidance on Smoke Control to Common Escape Routes in Apartment Buildings, published in 2012, offers a comprehensive guide to smoke shafts in residential buildings.

In a natural shaft, the head of the shaft

is terminated with an automatic opening ventilator. Mechanical shafts use extract fans, mounted on the roof and connected to the builders' work duct with sheet metal ducting. An automatic opening ventilator is mounted at the top of the adjacent stairwell and the complete system is controlled by an addressable system that provides automatic operation of the ventilation system by interface with the fire alarm system or smoke detectors.

For buildings with a storey over 18 metres high, firefighting access would also need to be taken into account. This would usually mean that the system is designed to cope with the door to the fire room being open to the lobby, representing firefighting conditions. In practise this simply means a higher extract volume flow rate for mechanical systems. Typically the required conditions within the lobby would be based on the tenability criteria in PD7974 Part 6:

- Visibility (5m for small enclosure and 10 m for large enclosure – extended travel distance would require a 10m visibility)
- Temperature (smoke temperature is less than 120oC – some say 60oC in a moist environment)

There is also a requirement by London Fire Brigade that the lobby/corridor returns to a smoke-free environment within two minutes of the last occupant's escape through the stair before the onset of firefighting. BS 7974 recommends design fire sizes for a range of applications.

Design, installation and maintenance

When smoke shafts were first adopted, each situation was, in effect, a new scenario. Therefore Computational Fluid Dynamics (CFD) was essential to ascertain the volume flow rate required to maintain the design conditions within the lobby. However, after years of common use, a bank of data exists to assist in designing systems, especially for residential buildings where one lobby is very similar to another. At Fläkt Woods we have data from dozens of models and have designed a matrix that can develop appropriate extract rates for buildings. More complex systems – for example those using twin shafts with reversible fans – would require the services of a suitable qualified fire engineer and a specialist smoke contractor.

The automatic opening ventilator above the stairwell is used to provide replacement air for the smoke shaft. There is a risk of lobby depressurisation when using mechanical extract in confined spaces like residential buildings, which could make it difficult to open exit doors from the lobby. Common methods to

► **Computational Fluid Dynamics (CFD) for selecting Volume Flow Rate.**

overcome this have been pressure sensing fan control, or reverse hanging the stair/lobby door.

A provisional design can be created in a matter of minutes by selecting modular components; builders' work shaft, lobby vent, roof extract unit (duty and standby fans) and a control system including automatic changeover between the fans when necessary

The installation of smoke shafts should be undertaken by a competent contractor who understands the working relationship of each installed element of the shaft system. Prior to handover, the commissioning process needs to be able to prove the effectiveness of the system in a variety of test operation scenarios, in accordance with agreed 'cause and effect'.

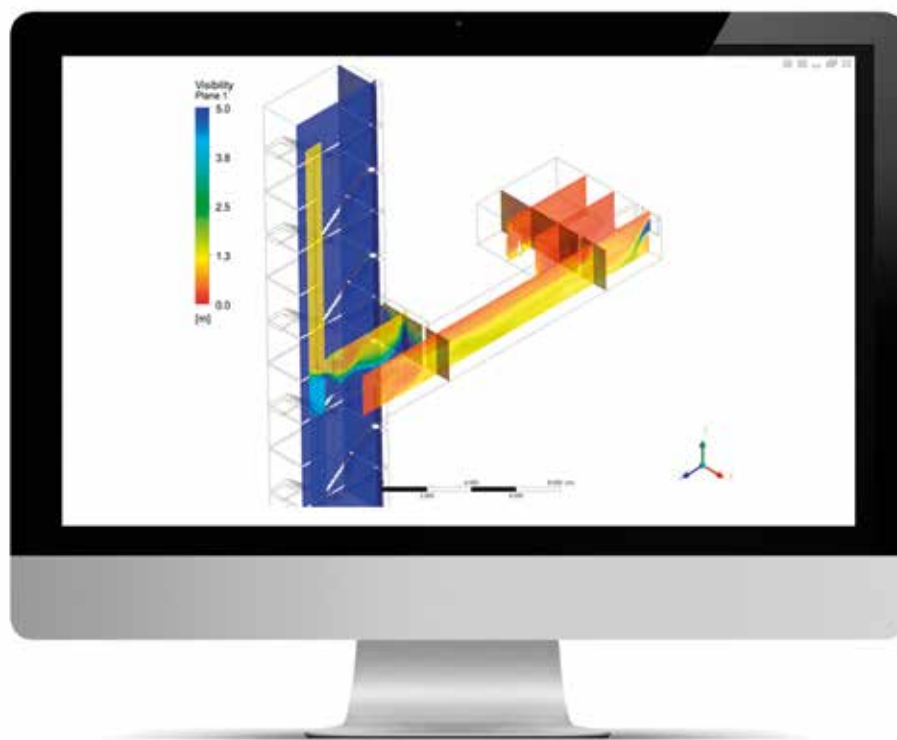
The Regulatory Reform (Fire Safety) Order 2005 (RRO) dictates that a building's 'responsible person' (generally the building owner, manager or FM) has to ensure proper operational service and maintenance of smoke control systems. Smoke shafts are obviously life-critical aspects of a building's operation, so correct service and maintenance is vital. The latest standard on smoke control states that 'smoke control equipment should only be maintained by a competent person with specialist knowledge of smoke control systems, adequate access to spares and sufficient information regarding the system'.

Smoke Shaft Vent

Drawing upon our extensive experience in smoke shaft ventilation, Fläkt Woods has recently launched an innovative 'all in one' solution for fire safety in residential buildings.

The Smoke Shaft Vent incorporates high efficiency extract fans, which are mounted on a roof and connected to the ducting to extract smoke. An automatic opening ventilator is mounted at the top of the stairwell and at each lobby leading to the smoke riser, with a control system that provides automatic operation of the ventilation by interface with the fire alarm system or smoke detectors.

Our Smoke Shaft Vent system is not only custom-designed to meet



the individual ventilation and sizing requirements for each building, but also comes in preassembled parts, ready to fit into position on site, including the fans, shaft interface ducting and controls mounted on a fabricated skid assembly off site from our Colchester factory – eliminating the additional labour requirements to install the system.

The rooftop plant can be fully installed after only three palletised lifts for fan assembly, riser duct assembly and the head-of-stair vent. For even further ease, the system comes with a pre-programmed HMI, which is also configurable on site.

All of the custom designed systems are configured using an easy-selection tool, making our expertise accessible to specifiers, building owners and installers.

Importantly, our mechanical Smoke Shaft Vent system not only provides a simple-to-install fire engineered solution using best practice from the latest UK Fire Safety Standards, but it also incorporates extract fans selected to meet ErP criteria, ensuring energy efficient operation.

For added efficiency, the Smoke Shaft Vent can provide on-demand daytime ventilation, extracting hot air from the corridors and stairwells within the building during summer months.

Heat build-up in corridors, particularly in residential buildings with energy centres providing the heating and heat distribution pipework running through

corridors, can be problematic, and a side benefit of smoke control systems is that they can be used to dissipate some of this heat, though any day-to-day ventilation functions must obviously be overridden in emergency conditions should a fire arise.

There are various approaches available – from running the smoke fans at low speed and opening the smoke lobby dampers proportionately to adding smaller environmental fans and dedicated dampers above the ceiling – but they are limited by the outside air temperature, so the reduction of corridor temperature cannot always be guaranteed.

Adding a temperature control function (as with our Smoke Shaft Vent) can ensure the ventilators are opened in a predetermined sequence to evacuate heat when temperatures become excessive. With our Smoke Shaft Vent the smoke fans are inverter controlled and run at low speed to deliver a notional air change rate within the lobby – typically four air changes. An automatic rain sensing control prevents the stairwell ventilator opening in poor conditions.

Smoke shafts have become the preferred solution for smoke control in high rise buildings, with mechanical options being ideal where space is limited.



**For more information, go to
www.flaktwoods.co.uk**

IFP

INTERNATIONAL FIRE PROTECTION MAGAZINE

**Relaunching
our APP for
Android and
iOS devices**



- We have restyled and improved all our APPS.
- Now available with News Updates, Magazine Articles, Blogs and Video.
- Featuring daily updates and original content.

**Download for FREE
today at the Google
Playstore and the
Apple iTunes Store
by searching for
IFP Magazine.**



ADVERTISERS' INDEX

Advanced Electronics	27
Apollo Fire Detectors	59
BIOex	13
C-TEC	21
Chemours	OBC
Coltraco	2
Coopers Fire Ltd	21
D-Line (Europe) Limited	15
Dafo Fomtec	IBC
Dr Sthamer	19
Dynax Corporation	77
E2S	65
Eaton Corporation	17
Fire Fighting Enterprises	39 & 65
Firetrace International	62
Gielle	40
Gulf Fire Magazine	56
Haes Systems	49
IWMA	33
Janus Fire Systems	25
MSA	30
Neutron Fire Technologies	25
Nexans	7
NFPA	4
Patol Ltd	49
Pentair Pumps	83
Reliable Fire Sprinkler (UK) Ltd	61
Rockwool Ltd	10
Safety Technology International (Europe) Ltd	84
Specified Technologies Inc	44 & 45
System Sensor Europe Ltd	22
TLX Technologies	39
Tornatech Inc	12
Tyco Fire Protection Products	IFC
Underwriters Laboratories	35
Unifrax Corporation	55
Vanzetti Equipment Srl	10
Victaulic	67
Vimpex	84
Xtralis	50

Come and see us at

**THE EMERGENCY
SERVICES SHOW**

23-24 September • Birmingham, UK

A+4

27-30 October • Düsseldorf, Germany

intersec

17-19 January 2016 • Dubai, UAE

www.mdmpublishing.com



“The independent alternative”

Foam Concentrates and Foam Systems



Follow us
Twitter **@fomtec**
Facebook **Dafo Fomtec AB**
www.fomtec.com



fomtec
Fire Fighting Foams & Equipment

Dafo Fomtec AB PO Box 683 SE-135 26 Tyresö Sweden
Phone: +46 8 506 405 66 Fax: +46 8 506 405 29
E-mail: info@fomtec.com Web: www.fomtec.com

When asset protection matters most. FM-200™.

FM-200™ clean agent can reach extinguishing levels in 10 seconds or less, stopping ordinary combustible, electrical, and flammable liquid fires before they cause significant damage. When fire is extinguished that quickly, it means less damage, lower repair costs, and an extra margin of safety for employees and valuable assets—making it easier to keep your business running smoothly.

Make sure your business is protected with the most widely specified clean agent in the world. Get maximum protection with FM-200™.

1.800.473.7790 • cleanagents.chemours.com

Fire Extinguishants by Chemours.
The Science of Protection.

 **FM-200™**



Chemours™ and the Chemours Logo are trademarks or registered trademarks of The Chemours Company. FM-200™ and the FM-200™ Logo are trademarks or registered trademarks of The Chemours Company, and its affiliates.